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HEPARIN AND THROMBOSIS*

BY

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(WITH SPECIAL PLATE)

While a search of the earlier literature reveals the fact that several investigators realized that certain mammalian tissues contain one or more anticoagulants, an active fraction was first isolated in Howell's laboratory in 1916 (McLean, 1916; Howell and Holt, 1918). Howell named the substance "heparin" (*hepar*—the liver), and he and his collaborators have studied its distribution, chemical properties, and physiological significance. For some time heparin was prepared exclusively from the liver tissue of the dog, and it was very difficult to secure sufficient amounts of a product satisfactory for physiological experiments.

In 1928 Dr. McHenry and I, desiring to use heparin in our histaminase work, found it possible to prepare active fractions from ox liver, and subsequently Charles and Scott (1933a) showed that this substance was present in varying amounts in a great many tissues of this species—lung, liver, and skeletal muscle—giving, in this order, the best yield.

Action of Heparin

Under certain conditions, as Howell originally showed, heparin acts as an antiprothrombase, but in other more physiological circumstances it is apparently an antithrombase. The finding of Professor John Mellanby (1934) that the action of a very potent thrombase added to plasma can be inhibited by heparin has been confirmed in my laboratory by Mustard and Jaques (1937). In these circumstances heparin is apparently an antithrombase. Heparin can, of course, be titrated against thrombokinase with considerable accuracy under appropriate conditions, so that thrombokinase may be termed an antiheparin or, conversely, heparin an antikinase. The product described by Charles, Fisher, and Scott (1934) and tentatively termed "antiheparin" turned out to be a typical thrombokinase (Ridout and Best; see Charles, Fisher, and Scott, 1934).

Recent Work on Heparin

The work on heparin in Toronto was started in the department of physiology in 1929. At that time only crude material was easily available, and any advance along physiological or therapeutic lines appeared impossible until a much more highly purified preparation was at hand. Furthermore, although it was known that heparin was an anticoagulant, its action on thrombus formation had been explored only to a slight extent. In one paper Shionoya (1927a), working at the Mayo Clinic, stated that an adequate dose of heparin did not prevent the formation of white thrombi, and this is certainly true when crude heparin is used in rabbits. He subsequently reported (1927b) that magnesium sulphate markedly retards thrombus formation in the heparinized rabbit.

PURIFICATION OF HEPARIN

Studies in purification were begun at my suggestion by Dr. Arthur Charles, a young organic chemist, in the department of physiology. Charles was presently transferred to the physiological and biochemical section of the Connaught Laboratories, where he had the privilege of working with Dr. D. A. Scott, whose studies on the crystallization of insulin and the preparation of protamine-zinc-insulin are well known to many. Charles and Scott (1933b, 1934, 1936) soon attained success in the purification of heparin, and before very long they evolved a process for the preparation of adequate amounts of satisfactory material from ox lung. Finally, a crystalline barium salt of uniform potency was obtained. An amorphous benzidine compound was also secured which gave the same empirical formula ($C_{23}H_{40}O_{20}N_2S_2$). I shall refer to this compound later.

The crystalline product contains nitrogen, a part of it at least in the form of NH_2 groupings, upon the inactivation of which the potency of heparin is lost. (Howell thought that his purified product was free of nitrogen.) Jorpes (1935), using purified heparin made by the Toronto procedure, noted the presence of sulphuric acid groups in the molecules, and there is some evidence that the loss of this grouping also may interfere with the activity. Tests for carbohydrate are positive but do not indicate the presence of glycuronic acid, which some previous observers had thought was present. An adequate discussion of the chemistry of heparin should, of course, include detailed references to the interesting and very important contributions made by Schmitz and Fischer, Jorpes, Chargaff, and others, but I must proceed with more physiological matters.

Charles has shown that when the crystalline barium salt is treated with excess of ammonium carbonate solution at 65° C. the barium may be completely removed. The heparin is then precipitated by acetic acid, centrifuged out, washed with ether, and dried. It can be stored as a dry powder. When required a solution can be made from this; tricresol may be used, and the solution sterilized by passing through a Berkefeld or Zeitz filter.

STANDARDIZATION OF HEPARIN

This brings me to a necessary digression—a consideration of the standard of heparin. We have suggested quite recently (Charles; see Murray and Best, 1938) that the material from the crystalline barium salt may be used as a standard. In a very informal discussion with Sir Henry Dale we agreed that it might be wise to make the standard available, if need should arise, as a solution.

* A lecture delivered at University College, London, on June 14, 1938.

I will not discuss here the various physiological methods for the standardization of heparin. They depend on the inhibition of the clotting of blood under certain conditions. A unit has never been defined exactly. It is usually stated to be the amount of anticoagulant which inhibits for twenty-four hours the clotting of 1 c.cm. of blood under certain conditions of temperature and so forth. We have suggested as a provisional unit the activity contained in 0.01 mg. (10 γ) of the barium-free material—that is, 100 units per mg. This would make a convenient unit from both the physiological and the clinical aspect.

A standard of heparin would not only be advantageous from the point of view of those interested in its action, either experimentally or clinically, but would also be of great service to anyone working on any aspect of blood

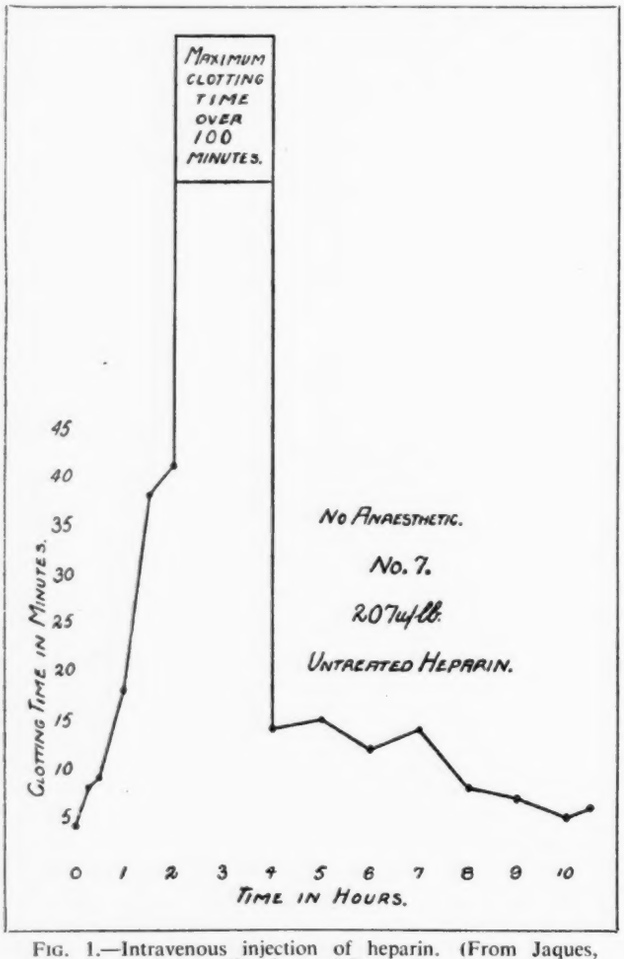

FIG. 1.—Intravenous injection of heparin. (From Jaques, Charles, and Best.)

clotting. We can standardize thrombase or thrombokinase against the standard heparin, and thus help to bring order out of a very confused field. More standards—for thrombase and thrombokinase—are urgently needed.

ADMINISTRATION OF HEPARIN

If a single dose of heparin be given intravenously the clotting time becomes prolonged. The increase in the clotting time depends on the size of the dose (Fig. 1). There is no negative phase—that is, the clotting time does not go below normal after a massive dose of heparin: it comes back fairly accurately to the initial value. Heparin can be given subcutaneously as well as intravenously. The crude material first used was not well absorbed, but purified heparin is absorbed quite rapidly from the tissue spaces, and a good effect can be obtained as a result of subcutaneous administration. In the rat the effect of one subcutaneous dose may be to send up the clotting time to over twenty-four hours, the return to normal occupying from twelve to twenty-four hours or longer (Fig. 2). However, two out of sixty experimental animals died as a result of haemorrhage into their subcutaneous tissues after the administration of heparin. There was not a great deal of haemorrhage, but 2 or 3 c.cm. is a large amount of blood for a rat. It is possible that the damage produced locally would not be sufficient to cause a dangerous or even a serious amount of bleeding in large animals.

When heparin is precipitated with protamine a very insoluble compound is formed which cannot readily be suspended (Best, Charles, and Cowan, 1937). With benzidine, however, a compound can be prepared which is absorbed quite slowly and gives a clotting time of ten

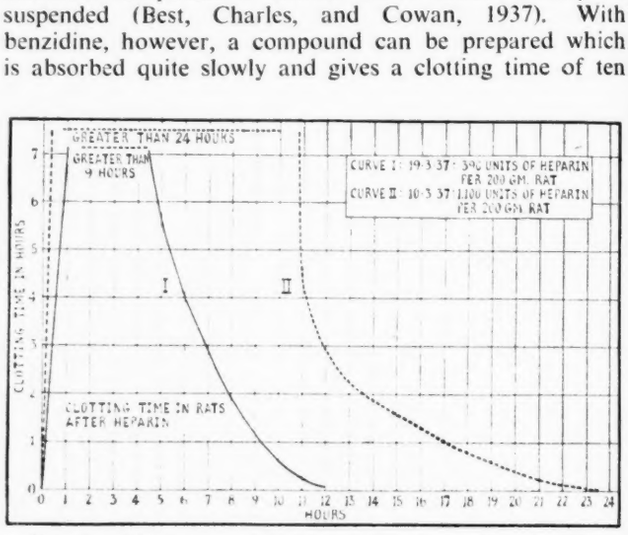
GREATER THAN 24 HOURS
GREATER THAN 9 HOURS
CURVE I: 19-3-37: 390 UNITS OF HEPARIN PER 200 GM. RAT
CURVE II: 10-3-37: 1100 UNITS OF HEPARIN PER 200 GM. RAT
CLOTTING TIME IN RATS AFTER HEPARIN
CLOTTING TIME IN HOURS
HOURS

FIG. 2.—Subcutaneous injection of heparin. (From Jaques, Charles, and Best.)

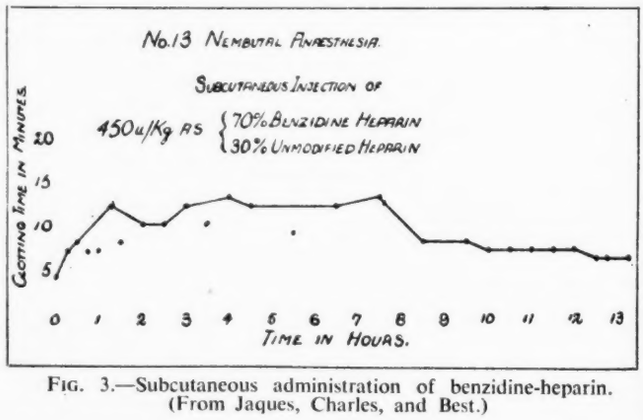

FIG. 3.—Subcutaneous administration of benzidine-heparin. (From Jaques, Charles, and Best.)

to fifteen minutes for quite long periods (Jaques, Charles, and Best, 1938) (Fig. 3). It was found advisable to have a little unmodified heparin in the mixture, as certain doses of benzidine-heparin given alone will have no effect at all, but if given with the unmodified heparin the immediate and the prolonged action are both forthcoming.

The best procedure in the administration of heparin is to give a small dose intravenously and to follow this with a constant intravenous injection. The clotting time can be set at any chosen level and maintained for long periods. In experimental animals we commonly give 40 units per kg. as the initial dose, and follow this with a continuous injection of 30 units per kg. an hour. With this dosage the clotting time is usually maintained at from twenty to thirty minutes. Somewhat smaller doses are used by Dr. Murray and his colleagues in the department of surgery.

Studies in Relation to Thrombi

We have carried out a number of studies on heparin in relation to the formation of thrombi. In the first series Murray, Jaques, Perrett, and I (1937) wished to determine the effect upon the mixed thrombus produced when the internal surface of veins is injured. This injury was produced in the first series of experiments by mechanical means, such as clamping the vessel repeatedly with strong forceps. In the second series chemical means were used. A section of the vein was isolated and sodium ricinoleate was injected into the lumen. It was allowed to remain for a few minutes and the blood was then permitted to flow again. After both these procedures a thrombus forms in a large percentage of the cases. Heparin was administered continuously to unanaesthetized dogs for seventy-two hours after the injury had been produced, and healing of the surface of the veins was found to take place in this time with no tendency for thrombi to occur subsequently. The fact that in the best series of experiments (see Table)

Exp. No.	Control			Heparin			Heparin u./lb./hr.	Hrs. Heparin given	
	Occluded	Patent	% Occluded	Occluded	Patent	% Occluded			
68	1	1							0.15 c.cm. Soricin injected in all veins. *Control* 17% patent *Heparin* 100% patent
69	2	–							
30	4	–							
72	2	–		–	2		10.3	68	
73	–	–		–	4		10.9	73	
74	1	1		–	2		10.5	72	
75	–	–		–	4		10.0	72	
Total	10	2	83%	–	12	–			

(From Murray, Jaques, Perrett, and Best.)

all the heparinized veins were open means that they were found in this state a week, usually, after the injury. Heparin, however, had been given for only three days.

STUDIES ON THE FORMATION OF WHITE THROMBI

These results were encouraging, but we wished to determine the effect of heparin on the formation of white thrombi. It is well known, of course, that the white thrombus is the nucleus from which the mixed thrombus grows. In certain conditions a thrombus is obtained which consists entirely of platelets, and it was interesting to determine the effect of heparin on this process. To do this the procedure evolved by Rowntree and Shionoya (1927) of the Mayo Clinic was followed. A cellophane shunt between the femoral artery and the femoral vein was made and the blood was allowed to flow for a certain time. Then the cellophane tube can be sectioned to determine whether any thrombi have formed (Fig. A on Plate). This was carried out on quite a large series of animals—monkeys, dogs, cats, and rabbits (Best, Cowan, and MacLean, 1938). In the rabbit it was difficult to observe the effect; although the tube never became occluded, small specks of thrombi could be seen in spite of the presence of heparin. There was no doubt, however, that in the case of the monkeys, dogs, and cats the action of heparin was to prevent the formation of the white thrombi. These, of course, are admittedly artificial conditions: the blood flowing over the glass and cellophane tubing favours the formation of thrombi, and one cannot conclude from the dose of heparin required in these cases how much would be needed to prevent a similar phenomenon inside the blood vessel.

HEPARIN AND CORONARY THROMBOSIS

Another line of approach to this problem is the study, in which Dr. D. Y. Solandt and I (1938) have spent a large part of our time this year, of the formation of thrombi which may be produced in the coronary artery of dogs. It is possible by dissecting out the left coronary artery in the dog to obtain a length of half an inch or so, to clip off all the branches, and put two clamps on the main stem a quarter of an inch apart. Then, by introducing sodium ricinoleate into the lumen of the vessel and leaving it for five minutes enough irritation is produced to cause thrombi to form. In a comparable series of animals in which this procedure was carried out and the animals were heparinized just before the sodium ricinoleate was injected a thrombus occurred in only one case. In other words, with this isolated exception, heparin prevented the formation of thrombosis of the coronary artery in the same way as it did in the peripheral veins. We were led to study the coronary artery because of the relatively high frequency of thrombosis of this vessel in the human species and also because it is apparently much easier to get a thrombus in the coronary artery in dogs than in some of the other arteries.

My collaborators and I have thus carried out four investigations which may be listed as follows: mechanical injury to veins, chemical injury to veins, formation of white thrombi, and the studies on the coronary artery. In each case an effect of heparin in preventing thrombosis could be demonstrated.

[Professor Best then projected a coloured film, the first part of which showed the flow of blood through a glass cell introduced between the carotid artery and the jugular vein of the monkey. The rapid formation of white thrombi was well illustrated, and the breaking off of large masses to form emboli. The growth of the thrombus downstream could be clearly seen. The thrombi tended to form in the periphery of the cell, where the flow is slowest, but also on a scratch in the axial stream where the flow was very rapid. The action of heparin in preventing the formation of white thrombi was demonstrated. In the second part of the film the passage of a plasma containing platelets but very few other cells through a small glass perfusion chamber was shown. The clumpings of the platelets could be clearly seen, together with the formation of the digitations. (Figs. B and C on Plate.)]

Use of Heparin in Physiological Experiments

I should like now to speak on the use of heparin in physiological experiments. It is obvious that there are a great number of things which one can do if adequate amounts of the purified material are available. For example, my colleague Dr. D. W. G. Murray has studied, among other problems, end-to-end anastomoses of blood vessels. This can, of course, be done without heparin, but the percentage of successful results is much greater when heparin is used.

Another illustration of the use of heparin is in so-called "exchange" transfusion in experimental animals. This subject has recently been studied by Thalhimer, Solandt, and myself (1938). In one experiment, for example, a nephrectomized dog in which the blood urea had become very high was joined by means of a pump, which enabled exchange to be made in each direction of the same amount

of blood, to a normal donor. The result was a precipitate fall of blood urea in the nephrectomized animal and a rise in the normal donor (Fig. 4). (One can bring the blood urea of the nephrectomized animal very quickly back to the normal limits if several donors are used, because the kidneys of the normal dogs do double duty and excrete urine for both.) Both animals were, of course, heparinized. I do not suppose that these findings have any obvious application to clinical medicine, but those of us who are medically trained have visualized very exceptional circumstances in which a completely anuric child might be joined for a few hours to a parent, both being

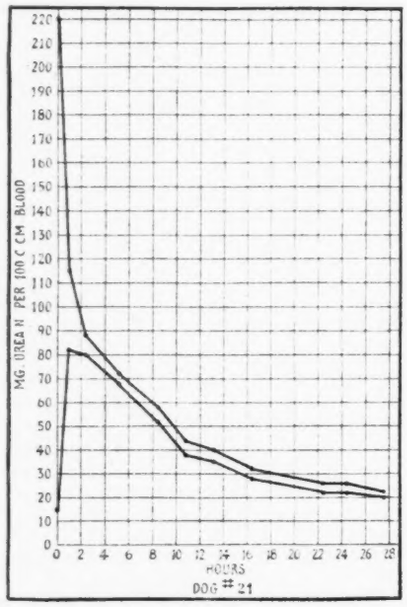

FIG. 4.—The fall in urea of a nephrectomized animal during "exchange" transfusion. (From Thalhimer, Solandt, and Best.)

heparinized. The clinician, however, who would have to take the responsibility in a situation of this kind might have different ideas on the subject.

Neutralization of Heparin by Protamine

Some years ago it was shown that protamine is an antithrombase (Waldschmidt-Leitz, Stadler, and Steigerwaldt, 1929). If protamine be added to the blood the clotting time goes up because of the antithrombase action of the substance introduced. About eighteen months ago Charles, Cowan, and I (Best, Charles, and Cowan, 1937) published a paper in which we showed that heparin and protamine formed a very insoluble compound which could not easily be resuspended. More recently it has been shown by Chargaff and Olson (1937) that if heparin be given to an animal and be followed by protamine the effect of the heparin may be completely neutralized and the clotting time brought back to normal with great rapidity. This has been confirmed by Jaques and myself. Many results can now be brought forward in confirmation of the fact that protamine can be used to neutralize the effect of heparin *in vivo* and *in vitro* (Fig. 5).

Physiological Significance of Heparin

The first piece of evidence in favour of the view that heparin plays a physiological part is obtainable from a study of its distribution: the work of Howell, and subsequently that in Toronto and elsewhere, has shown its presence in various tissues, including blood. Again, the recent work by Jorpes, Holmgren, and Wilander (1937) (see also Holmgren and Wilander, 1937) along histological as well as chemical lines has shown its presence in particularly large amounts in the mast cells of Ehrlich, and has suggested the possibility that these cells are responsible for its production. A third point has been brought out by Waters, Markowitz, and Jaques (1938) in my department—namely, that there is a good deal of evidence

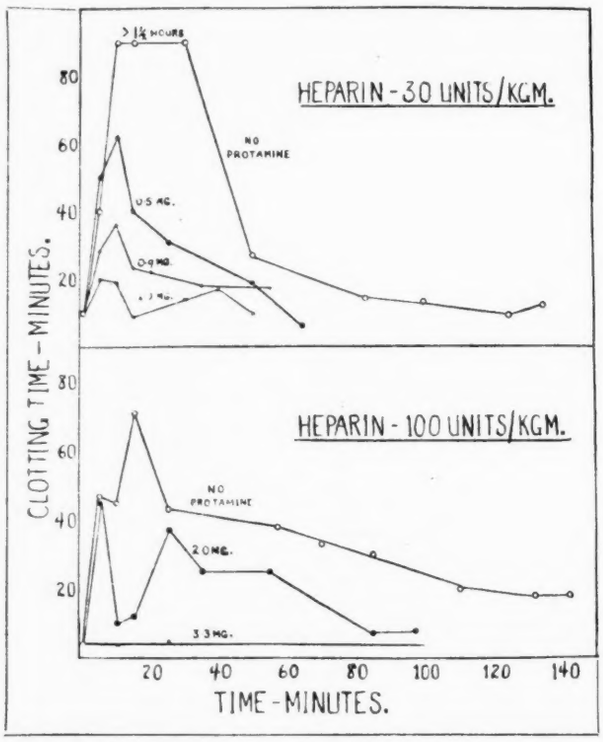

FIG. 5.—Neutralization of heparin by protamine. (From Jaques, Charles, and Best.)

that the increased clotting time seen in anaphylactic shock in the dog is due to the liberation of heparin. This has been shown also to hold good for peptone shock.

It has been known for some time that histamine, while it may account for many of the signs of anaphylaxis, has little or no effect upon the coagulability of the blood (Dale and Laidlaw, 1911). When a dog goes into anaphylactic shock there is a very great rise in clotting time—that is, from four to five minutes to perhaps forty-eight hours. This was originally shown by Biedl and Kraus (1909). Samples of the blood can be taken and treated with protamine, and the heparin equivalent estimated by this procedure. The results of experiments of this kind carried out by Jaques and Waters are shown in Fig. 6. These results show that heparin in a concentration of approximately 1.5 units per c.cm. has appeared in the blood of the animal in anaphylactic or peptone shock. This amount of heparin is sufficient to raise the clotting time of the blood from the normal value to such extremely high levels—sixty to seventy hours—that it may be termed incoagulable. When an animal was shocked after hepatectomy, Waters, Markowitz, and Jaques found little or no rise in the clotting time of the blood or in the heparin equivalent. Furthermore, these workers have obtained from the blood of the shocked animal much more heparin than can be detected in the blood of the normal animal, while the liver of the shocked animal contains less heparin than normal liver. The physiological and chemical results provide practically conclusive evidence that the anticoagulant isolated from the blood of the shocked animal is heparin, and it may be possible to prepare this material

as the crystalline barium salt. It appears, therefore, that in anaphylactic shock in dogs histamine, heparin, and possibly other substances are liberated.

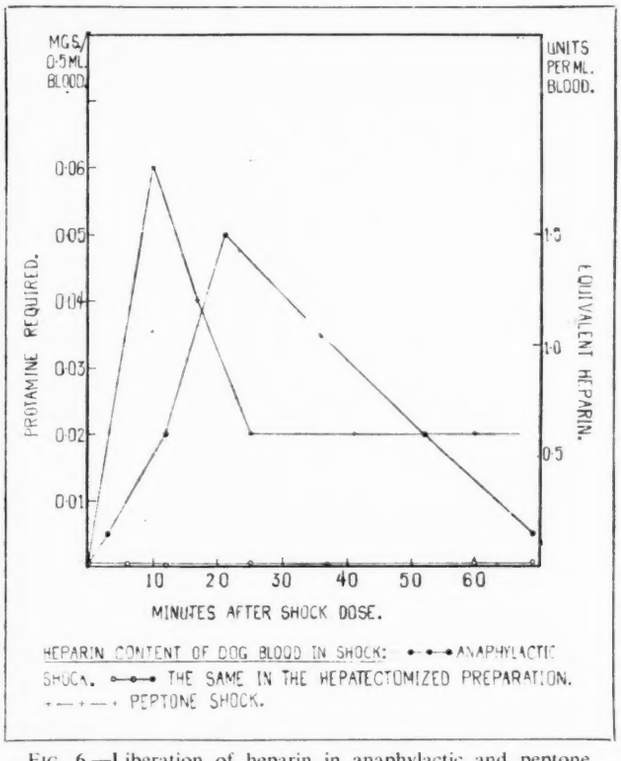

FIG. 6.—Liberation of heparin in anaphylactic and peptone shock in dogs. (From Waters, Markowitz, and Jaques.)

We may conclude that several points of evidence now suggest the possibility that heparin is a substance of physiological importance.

The Possibility of Clinical Application

As soon as more highly purified preparations of heparin became available investigations were begun in the department of surgery under the supervision of my colleague Dr. D. W. G. Murray. It was found that none of the preparations available except that which had been through the stage of the crystalline barium salt could be given with complete safety. The fact that this highly purified material can safely be given to human subjects over long periods is well established by the findings on some 350 patients, most of whom had experienced a major operation before heparinization was started (Murray and Best). The intravenous administration of heparin is never begun earlier than two or three hours after the completion of a major operation—a splenectomy, for example—and is continued until the patient is able to move actively about in bed. This may be for three or four days, or it may extend to weeks.

It is of great interest that workers in Sweden (Crafoord, 1937; Hedenius, 1937; Holmin and Ploman, 1938; Magnusson, 1938), using heparin prepared by the method elaborated in Toronto, have initiated clinical studies on the prevention of thrombus formation.

It is hopeless to attempt to secure information regarding the effect of heparin in the prevention of thrombus formation by the indiscriminate heparinization of post-operative cases or by the heparinization of isolated cases. This has not been attempted in Toronto. Murray and McKenzie are selecting, in so far as is possible, those cases in which the hospital statistics show that the incidence of post-operative embolism is relatively high. I suppose the best type of case to study would be those exhibiting that rather rare condition known as phlebitis migrans. If it were possible to collect a group of these cases in one ward and to have them thoroughly studied before and after the administration of heparin a great deal might be learned.

A few words may be said with regard to the practical application of the work on coronary arteries in dogs. If the clinical cardiologist knew when thrombosis was about to occur—that is, if there were definite premonitory signs—he might by the appropriate use of heparin secure a short reprieve, perhaps even a long one, for some of his patients. The material is readily available, and can apparently be given safely to hospitalized patients; but our lack of knowledge, or perhaps the complete absence of premonitory signs, makes it impossible to conduct a clinical investigation along these lines. Heparin might be given immediately after one attack of coronary thrombosis, but clinicians do not speak with a single voice when discussing the spread of thrombosis from the original focus or the significance of intramural thrombi formed as a result of coronary thrombosis. If a clinical investigation of cardiac cases should be initiated, the necessity for studying very large numbers and of heparinizing only alternate cases is obvious.

One of the best methods of determining the clinical role of such a substance as heparin is to push ahead with more studies along physiological and experimental pathological lines in the hope that the clinical applications will become obvious. It is true, of course, that many of the experimental conditions which have been studied are not closely related to those observed in the clinic, but the results have been very stimulating, and one hopes that investigations along these lines will be pursued.

I should like to thank Professor Lovatt Evans for his invitation to lecture on this subject in his department.

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THORACOSCOPY IN DIAGNOSIS

BY

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(WITH SPECIAL PLATE)

The exact nature of an intrathoracic tumour is often very difficult to determine, but in recent years considerable help has been obtained from the skiagram, stereoscopic skiagrams, the tomogram, the bronchogram, and from bronchoscopic examination, and with these ancillary diagnostic aids it is true to say that in the majority of cases of bronchial tumours an accurate diagnosis can be made, and, furthermore, this type of tumour constitutes the large majority of intrathoracic growths. Nevertheless, there still remain the tumours arising from the mediastinum, from the pulmonary tissue or bronchioles, or from the chest wall, and secondary tumours, in the diagnosis of which the above-mentioned diagnostic measures often, and indeed usually, fail to establish their exact nature. In fact, in these cases the skiagram may be misleading, for the rounded, smooth, sharply defined outline of some of them often suggests an innocent tumour such as a dermoid or a fibroma, etc., but the subsequent history or investigation has proved many to be malignant. Even after the induction of a diagnostic pneumothorax the appearances may still be deceptive.

During the last decade there has been a very great advance in thoracic surgery, and, because of this, accurate diagnosis of these tumours has become more and more important; for if they can be proved to be innocent growths or growths lying free in the thoracic cavity, or even if they are malignant growths—provided they are confined to a single lobe, are discrete, and are not invading the mediastinum—surgical intervention can be expected to offer the prospect of a cure.

In spite of the great improvement in technique it cannot yet be claimed that an exploratory thoracotomy has reached the degree of benignity that is associated with an exploratory laparotomy, and, therefore, for the above reasons, when we have had to deal with such tumours we have endeavoured, by inducing an artificial pneumothorax and subsequently introducing a thoracoscope into the pneumothorax cavity, to ascertain the exact nature and extent of the growth, and, if possible, to remove a piece for section. At the same time it has also been possible to establish the precise anatomical relations of the growth, thus giving much help to the surgeon in planning his line of approach at the subsequent operation, a detail which may determine the success or failure of the operation; for, with the exception of cerebral surgery, there is probably no other branch in which the question of the approach to the operation is of such vital importance.

The method was first described in English in March, 1922, in the epoch-making paper by Jacobaeus and Einar Key in *Surgery, Gynecology and Obstetrics*. Since then further observations have been made and certain appearances recorded, but on the whole it has not received the attention it deserves. One reason perhaps is that fluid, either serous or haemorrhagic, may complicate the field, and although completely replaced by air the previous deposition of fibrin may obscure landmarks and all detail. Even with fluid, or even with blood, this is, however, by no means always the case, and where there is no fluid and a diagnostic artificial pneumothorax is induced everything stands out with amazing clearness.

We believe that the cases which we are describing in this article demonstrate the value of diagnostic thoracoscopy.

Case I

A man aged 36 was admitted to the London Chest Hospital in February, 1930, complaining of blood-stained sputum. There was marked clubbing of the fingers. On the left side of the chest absolute dullness was found from the fifth rib downwards. Breath sounds were faint, and there was some pleural rub. The skiagram revealed a discrete rounded mass in the left lower lobe: the true lateral skiagram showed an oval sharply defined mass lying posteriorly. The Wassermann reaction and hydatid tests were negative. The white blood cells numbered 16,000 per c.mm., with 74 per cent. polymorphs. No tubercle bacilli were present in the sputum.

A pneumothorax was induced, and the lung, contrary to what we hoped, appeared to fold itself, as it were, around the mass. A thoracoscope was passed into the fifth space in the mid-axillary line. The surface of the lung was seen to be interrupted in many places by the invasion of what was obviously a malignant growth. In spite of this, as the tumour was so discrete, lobectomy was advised. This was performed by Mr. Romanis on March 21. Apart from a temporary empyema, which was drained and soon resolved, the patient made an excellent recovery, and six weeks later was well, gaining strength and putting on weight. He went away to a convalescent home, and six months later returned with the left side of the chest completely filled by malignant growth, apparently arising from the mediastinal glands.

Case II

A man aged 48 years was admitted to the London Chest Hospital complaining of pain between the scapulae. He had been quite well until two months before, when he was seized with an acute pain in the chest. The pain was increased by inspiration. This was followed by cough and some blood-stained sputum.

Physical examination was negative, except for some impairment of the percussion note in the left interscapular region. The Wassermann reaction was negative. The skiagram revealed a lobulated mass the size of a grapefruit, arising from the left hilar region. A true lateral skiagram showed a single spherical mass lying posteriorly. The bronchoscopic examination revealed some pressure coming from without, partially occluding the left main bronchus. An artificial pneumothorax was induced, and a thoracoscope was introduced into the fifth space anteriorly. The lung could be seen to be collapsed and free; the mass, reddish yellow in colour, was lying in the substance of the lung and infiltrating along under the visceral pleura. The condition was obviously malignant. In view of this no operation was considered, and the patient died six months after leaving hospital.

Case III

A woman aged 30, seen privately in March, 1938, complained of pain in the mid-sternal region. Eight weeks previously she had had pleurisy with some fluid on the left side. She was kept in bed for fourteen days, then went to her home town for convalescence. While there she consulted her own family doctor, who, because of the history of pleurisy, had the chest *x*-rayed. The radiograph revealed a mass on the right side, perfectly rounded in outline, apparently arising from the mediastinum opposite the region of the shadow of the aortic knuckle (Plate, Fig. 1). The true lateral skiagram showed the tumour to be situated posteriorly. An interesting feature in the history was that she had been hit by a tennis ball in the mid-sternal region four years before, and ever since she had experienced pain on and off in that region.

On admission to the London Chest Hospital a diagnostic pneumothorax was induced on the right side and the lung collapsed away from the tumour, leaving it free, unchanged

in position, and unaltered in shape. A thoracoscope was inserted in the fourth space, in the mid-axillary line, and a bluish-purple tumour could be seen, with fine veins on its surface arising in the posterior mediastinum from behind the great vessels and extending almost up to the arch of the subclavian artery and completely independent of the lung. A painting was made by Mr. Shiells (Plate, Fig. 2).

Four days later the patient was operated on by Mr. Holmes Sellors, and so far as was possible the tumour was removed. It was filled with a chocolate-coloured thick creamy substance. This was sucked out and finally mopped dry with gauze. The portion of the wall of the tumour under the great vessels had to be left behind; it was wiped clean and swabbed with formalin. The patient made an uninterrupted recovery.

The report on the tumour was as follows: "The cyst wall consists in great part of vascular fibrous tissue with a striking amount of lymphoid tissue disposed mainly around the vessels. In some parts large thin-walled blood spaces are seen and haemorrhage has occurred. Other components of the cyst wall are fat, bundles of muscle fibres, ciliated columnar epithelium, and acinous glands. No ectodermal elements have been recognized, and no cartilage or bone." The blow from the tennis ball had possibly caused a haemorrhage into the teratoma.

Case IV

A man aged 33 complained of pain in the right side of the chest. Sixteen months previously he had had pain in the region of the dorsal spine radiating to the right costal margin anteriorly. For this condition he was admitted into a hospital in the North, where, after complete investigation, his appendix was removed; the pain, however, still persisted. Because of this he was again examined, and a skiagram of his chest revealed a mass in the right lung. He was admitted into the London Chest Hospital.

Physical examination was negative, except for some change in the percussion note at the right base posteriorly. The Wassermann reaction and the Casoni test were negative. The skiagram revealed a single spherical mass with smooth, sharply defined borders the size of an orange, situated in the right lower lung field (Plate, Fig. 3). A true lateral skiagram showed the mass to be lying close to the vertebral column (Plate, Fig. 4). Bronchoscopic examination was negative. An artificial pneumothorax was induced; the lung appeared to collapse away from the tumour, suggesting an innocent condition. A thoracoscope was introduced into the fifth space in the mid-axillary line. The mass was seen to be reddish yellow in colour, arising from the chest wall close to the vertebral column. It appeared to have a well-defined capsule. The lung was adherent to the growth at one point only, but it was infiltrated with multiple yellow sago-like nodules. Adjacent to the tumour, on the chest wall, were three secondary masses the size of a pea.

A section of the tumour was taken by means of forceps introduced through a second cannula; no undue bleeding was caused by this procedure. The section was reported by Drs. Gloyne and Page as a mixed-cell sarcoma, ? malignant change in a neurofibroma. In view of these findings a radical operation was regarded as impossible, and the patient was referred for deep *x*-ray therapy.

A recent necropsy provides another illustration of the potentialities of the method.

A woman was admitted to another hospital with a massive pleural effusion. The spleen was enlarged and a mass could be felt in the epigastrium. All the usual tests were made, but without result, and the differential diagnosis was malignant growth or lymphadenoma. An exploratory laparotomy had been advocated by two or three physicians as a diagnostic measure. Before this was done, however, the patient died. The post-mortem examination revealed a huge malignant mass behind the stomach, large secondary growths in the spleen, and metastases in many other parts; but, what is of interest in connexion with this communication, there were a number of raised white nodules the size of half a pea-nut on the parietal pleura. It would have been a simple matter to replace the fluid by air through the thoracoscopic cannula, to insert the telescope, see the nodules, and remove a portion for section, whereas the proposed alternative would have been highly dangerous.

As regards technique, one of us (F. G. C.) uses a single-cannula method with a direct-vision telescope. Through this single cannula all instruments can be inserted, including the biting forceps and a diathermy knob for the arrest of haemorrhage, if any. The other employs the two-cannula technique when removing a piece of the growth for section.

Conclusion

The cynics have suggested, occasionally with some truth, that modern methods of investigation are more distressing and dangerous to the patient than the disease itself; but this criticism cannot seriously be advanced in the case of an exploratory thoracoscopy: for in skilled hands the patient should feel nothing more than the first hypodermic injection of the local anaesthetic, and it is clear that this investigation, as illustrated by Cases II and IV, may save the patient an unnecessary thoracotomy. If a pleural effusion is present, then the thoracoscopy can be carried out at the same time as the aspiration provided the paracentesis is accomplished through a thoracoscopic cannula, a procedure which gives more efficient evacuation of the fluid than an ordinary needle, with no more discomfort.

With ordinary aseptic precautions an exploratory thoracoscopy should be without risk to the patient. This has been our experience with a large number of cases.

CONGENITAL ATRESIA OF THE OESOPHAGUS

BY

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(WITH SPECIAL PLATE)

The following case is recorded not on account of its rarity but because the condition has been so seldom mentioned in the English literature.

Case History

The patient was a female child born on August 23, 1937, of healthy parents. The mother had had three pregnancies: boy, who died at the age of 3 of pneumonia; a miscarriage; and the patient. Delivery in the present case, in the maternity ward of St. George's Hospital, was spontaneous and normal. Excessive liquor amnii was noted. There was some difficulty in reviving the baby, as she seemed choked with mucus. The excess of mucus continued, but nothing alarming was observed until the second day, when the mother's milk had come in. On being put to the breast the baby sucked easily, but in a few minutes choked, and turned blue in the face. The nurse rescued it, and sucked out the milk and mucus from its mouth. The same result was obtained at the next feed. Mucus in the mouth increased in quantity, and, apart from the attempted feeding, the child had attacks of cyanosis, which were relieved by clearing the throat.

On the second evening Dr. T. F. McNair Scott examined the child. It was lying in the cot, breathing with some difficulty and through a great deal of moist mucus in the mouth and nose. It was normally developed and nourished, but moderately dehydrated. The skin was clear. No glands were palpable. Examination of the head revealed no craniotabes. The anterior fontanelle measured about 1½ by 1½ inches, being depressed, and the posterior fontanelle one finger-tip.

The eyes, mouth, nose, ears, neck, and heart were normal. There was no impairment of percussion note anywhere in the lungs. Breath sounds were transmitted mainly to the interscapular region. Nothing abnormal was found in the abdomen. Respiratory sounds were clearly transmitted to the stomach region. The genitalia were those of a normal immature female and the limbs were normal. Meconium was being passed.

From the history of excessive mucus and inability to take food without choking, a diagnosis of congenital absence of the oesophagus was made.

INVESTIGATIONS

1. *Radiological.*—On examining the baby under the screen it was immediately noticeable that the stomach contained no air. After the child had sucked the bottle containing milk and a barium salt, some air did appear in the stomach. The opaque meal was seen to enter, and to distend a blind point of the oesophagus which ended at the level of the second thoracic vertebra. The baby vomited soon after, and became very choked up. A radiograph confirmed the condition (Plate, Fig. 1). In addition a hemivertebra was present between the fifth and seventh thoracic, and the sixth right rib was absent.

2. *Examination of meconium* by staining a smear of it with gentian-violet and decolorizing with acid alcohol—Farber's test (1933)—revealed the presence of squamous epithelial (amniotic) cells as in normal meconium. This indicated that there must be a communication between the mouth and the intestine. Since the proximal part of the oesophagus ended in a blind pouch there must have been a communication between the trachea and the stomach.

COURSE

In view of the above findings it was decided that no operative intervention was indicated. All feeding by mouth was stopped, and the baby was kept hydrated by the introduction of from 60 to 120 c.cm. of 5 per cent. glucose and saline intraperitoneally twice daily. The cot was kept at an angle of about 30 degrees, the head being down. Mucus continued to be quite profuse, and the baby had several attacks of cyanosis. With the aid of suction, and 1/200 grain of atropine when considered necessary, this was overcome. The baby remained comfortable, and slept most of the time.

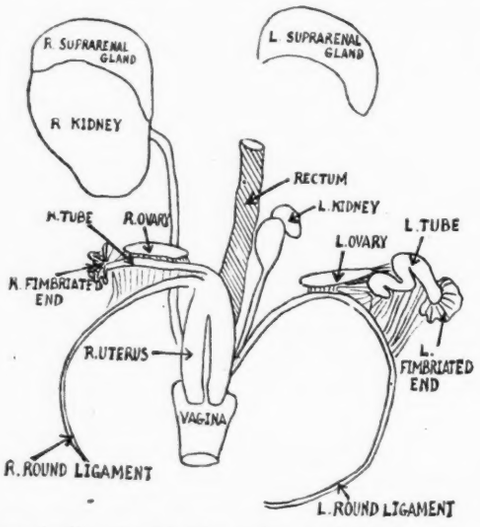
The physical signs did not change much from those originally described until the day before death. The lungs remained resonant to percussion, but adventitious sounds developed, mainly rhonchi and coarse rales. On that day, following the intraperitoneal injection, quite profuse bleeding occurred from the puncture wound. Local pressure and thromboplastin were used, but the ooze continued. About thirty-six hours afterwards, with cessation of bleeding, the baby died. The blood taken after death was sterile. It was noted, however, that clotting did not occur.

Haemorrhage occurring in a newborn infant associated with delayed or absent clotting suggested a diagnosis of haemorrhagic disease of the newborn. The unusual feature here was that the onset of the bleeding was delayed to the eighth day in the absence of a septicaemia.

Before performing the necropsy it was decided to inject lipiodol into the trachea to see if the suspected tracheo-oesophageal fistula could be demonstrated. This was seen on the screen, and the lower portion of the oesophagus was shown to be leaving the trachea about five millimetres above the bifurcation. The lipiodol filled the bronchial tree and passed to the lower end of the oesophagus (Plate, Fig. 2). It was prevented from entering the stomach by an air-lock, as was afterwards discovered at necropsy.

Necropsy

The body was that of a somewhat wasted child. There were numerous puncture marks on the abdominal wall. The congenital atresia of the oesophagus was confirmed, as was also the tracheo-oesophageal fistula (Plate, Fig. 3—St. George's Hospital Pathological Museum). A window has been cut in the anterior border of the trachea to show the fistula. There was no fibrous communication between the two portions of the oesophagus. The stomach contained no food, only meconium. The rest of the gut was normal, as were the biliary system, liver, and spleen. The heart and great vessels were also normal, but the ductus arteriosus was still patent. The suprarenals were normal in size, shape, and position. The right kidney and ureter were normal. The left kidney was extremely atrophic, and the pelvis was very dilated and was as large as the kidney itself. The ureter, which entered the bladder, was very short, and as a result the left kidney was within the pelvis minor. The bladder and urethra were normal. The genital system was also abnormal on the left side. The left cornu of the uterus had not developed at all, and the left round ligament joined the right cornu at its cervical end. The medial end of the left Fallopian tube terminated blindly at some distance from the uterus. The left ovary appeared normal. The drawing here reproduced shows the condition



diagrammatically, the bladder being omitted for the sake of simplicity. No other abnormalities were found.

Cases in the Literature

The first published case of this condition was observed by Thomas Gibson (1703), a Fellow of the College of Physicians, in 1679, and it is noteworthy that his clinical description was faultless. He afterwards performed a necropsy, on which the diagnosis was made. Since then, however, the condition has received scant attention in the English literature, and it has been left to the American schools particularly, and to some extent the European schools, to draw attention to it.

Plass (1919) collected 136 cases. He showed that about 30 per cent. had other congenital abnormalities. Rosenthal and Himmelstein (1932) noted 255 cases in the literature, and 204 of these had tracheo-oesophageal fistulae. Recently at least ten cases have been reported annually. The various types of abnormality have been classified by McClellan and Elterich (1934). They describe twelve different types, which are clearly understood when one considers the development of the oesophagus and trachea. Keith and Spicer (1907) described the embryology, and Keith (1910) illustrated it by cases in a later publication. They state that in the 3.2 mm. embryo (third week) the floor of the anterior part of the primitive oesophagus becomes evaginated and forms the trachea. In the 12.5 mm. embryo (fifth week) the tracheo-oesophageal septum has completely formed.

The symptomatology as described in the case above is quite typical. Few live more than a week, and none has lived more than a month. Death is nearly always due to bronchopneumonia.

Treatment

Gastrostomies have been performed repeatedly; but, unless the cardiac end of the stomach is tied, the food flows backwards up the oesophagus into the trachea, except in the very few cases where there is no tracheo-oesophageal fistula. It has been the hope of some surgeons to keep the patients alive long enough to perform an intrathoracic plastic operation at a later date. This seems a forlorn hope, and it is questionable whether it would be justified even if successful, for so many cases are associated with multiple congenital lesions.

Summary

1. A report of a case of congenital atresia of the oesophagus with tracheo-oesophageal fistula is given.

2. The indications are that the anomaly occurs much more often than is generally believed.

3. The anomaly is nearly always associated with other congenital lesions.

4. It produces a quite characteristic syndrome, which if kept in mind makes a clinical diagnosis relatively simple.

5. Auxiliary methods of diagnosis are mentioned.

6. Death has occurred within four weeks in every recorded case.

I should like to express my thanks to Dr. T. F. McNair Scott, recently paediatrician to St. George's Hospital, for allowing me to record this case.

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THE BACTERIOSTATIC EFFECTS OF SULPHONAMIDE-P, SOLUSEPTASINE, AND M & B 693

BY

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AND

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The bacteriostatic properties of these three drugs on *Streptococcus viridans* and *Staphylococcus aureus* were examined by the slide method of Wright, modified by Fleming (1924, 1938). A different technique, described below, was necessary in the cases of *Neisseria gonorrhoeae* and *N. meningitidis*, as these organisms did not show sufficiently differentiated colonies for counting. The drugs were dissolved in saline and kept made up in dilutions of 1 in 1,000, sterilized by heating to 60° C. for one-half to one hour.

Streptococcus viridans and Staphylococcus aureus

TECHNIQUE

The tests were set up in the following manner. First a suspension of a fresh culture of the organism in sterile saline was prepared and matched to correspond in density with Brown's No. 1 tube. Human blood was then withdrawn and defibrinated by shaking with glass beads. Half of the blood was separated and forced five to seven times through cotton-wool to reduce the number of leucocytes present. In this way the white cell count was lowered to 500 to 1,000 per c.mm. and most of the polymorphs were removed. Blood so treated is referred to below as "deleucocyted." Defibrinated blood was found to be slightly deleucocyted, the white cell count after defibrination falling from about 7,000 to 5,000 per c.mm., but many polymorphonuclear cells were still present.

Mixtures were then made of one volume of suspension of the organisms to three volumes of defibrinated and of deleucocyted blood. Equal volumes of the blood–organism mixtures and the dilution of the antiseptic were then mixed and slides set up as described by Fleming. Three dilutions of each chemical substance were employed, and the final dilutions in the compartments of the slides were 1 in 2,000, 1 in 20,000, and 1 in 60,000. Prepared slides were incubated at 37° C. in moist conditions for twenty-four hours, and after incubation colonies were counted under the low power of a microscope.

RESULTS

Streptococcus viridans.—Three strains isolated from patients' throats were examined, and the results in all three examinations showed that the drugs affected the growth of the organisms, but only in the presence of white blood corpuscles, including polymorphs. A typical result of a count of *Str. viridans* is shown in Table I.

TABLE I.—*Effect of Drugs on Str. viridans*

Drug	Number of Colonies in Dilutions of—			Control
	1/2,000	1/20,000	1/60,000	
M & B 693:				
a	16	20	20	900 +
b	Uncountable in all dilutions			+++
Sulphonamide-P:				
a	30	600	900+	900 +
b	Uncountable in all dilutions			+++
Soluseptasine:				
a	20	800+	800+	900 +
b	Uncountable in all dilutions			

a = mixed with defibrinated blood; b = mixed with deleucocyted blood.
+ sign after a number indicates the presence of very small colonies not counted in the figure quoted.

Similar results were obtained for the other strains of *Str. viridans*. In the presence of defibrinated blood containing normal numbers of white cells it will be seen that M & B 693 is a very efficient bacteriostatic agent, even at a dilution of 1 in 60,000, whereas the other two drugs are efficient at a dilution not greater than 1 in 2,000. In deleucocyted blood none of the drugs has much bacteriostatic effect, although the colonies appear much smaller in the high concentrations than in the controls, which contained no drugs.

Staphylococcus aureus.—None of the drugs appeared to have the slightest effect on the growth of this organism. Two strains of staphylococcus, one freshly isolated from a boil, were examined, and in both cases the growth after twenty-four hours was confluent and general in all slides.

Neisseria gonorrhoeae and N. meningitidis

TECHNIQUE

These organisms were examined by the slide method, but this was abandoned after a few experiments, as colony formation was poor, making counting very difficult. The following method was then devised. Mixtures of one volume of suspensions of fresh cultures of the organisms and three volumes of defibrinated and deleucocyted blood

respectively were prepared as before. Fifteen drops of these mixtures were then measured into sterile dwarf test-tubes, and equal volumes of the various dilutions of the drugs were added. The final dilutions of the drugs were the same as in the slide technique. The mixtures were shaken and incubated at 37° C. for twenty-four hours under moist conditions. After incubation samples of the contents of the tubes were plated out on blood agar and the plates were incubated for a further twenty-four hours in a moist chamber. The number of colonies on each plate was then counted, and in this way an estimate of the bacteriostatic effects of the dilutions of the drugs was obtained. Table II illustrates a typical result with a stock culture of *N. gonorrhoeae*.

TABLE II.—*Effect of Drugs on N. gonorrhoeae*

Drug	Number of Colonies in Dilutions of—			Control
	1/2,000	1/20,000	1/60,000	
M & B 693 :				
a	0	0	10	77
b	73	80	32	26+
Sulphonamide-P :				
a	6	17	5	77
b	7	9	29	26+
Soluseptasine :				
a	0	2	11	77
b	1	3	3	26+

Here again two of the drugs acted much better in the presence of a full complement of leucocytes. Thus M & B 693 was bacteriostatic at a dilution of 1 in 60,000 in the presence of defibrinated blood, whereas when mixed with deleucocyted blood it did not appear to be bacteriostatic at a dilution of 1 in 2,000. Sulphonamide-P (sulphanilamide) was bacteriostatic at 1 in 60,000 in the presence of defibrinated blood, but was not active at this dilution when mixed with deleucocyted blood. This activity of sulphonamide-P is in agreement with the clinical findings of Cokkinis and McElligott (1938). Soluseptasine was active at all dilutions in both defibrinated and deleucocyted blood. In this case it is possible that some difference in activity might manifest itself at higher dilutions of the drug.

Neisseria meningitidis

Preliminary experiments with a number of different strains of *N. meningitidis* indicated that soluseptasine was not as effective an agent against this organism as was M & B 693. Thus, in mixtures containing normal cerebrospinal fluid, a suspension of an organism grown from a fatal case in a recent epidemic, and various dilutions of the drugs, soluseptasine was found to be bacteriostatic at a dilution of 1 in 1,000 and not at 1 in 10,000, whereas M & B 693 was effective at a dilution as high as 1 in 50,000, even in the absence of blood.

When the organisms were examined by the method described above these results were confirmed, as may be seen in Table III.

The results shown in Table III indicate that in high dilutions the drugs act better in the presence of leucocytes—that is, in defibrinated blood. In lower dilutions sulphonamide-P appears to work slightly better in the absence of the leucocytes. This, however, was not a constant finding.

Of the three drugs M & B 693 appears to inhibit growth slightly more successfully than the other two in all dilutions, and with or without leucocytes. Sulphonamide-P is also effective in high dilution even in the absence of leucocytes. It should be noted here that our results with this drug are better than those obtained by other authors

TABLE III.—*Effect of Drugs on N. meningitidis*

Drug	Number of Colonies in Dilutions of—			Control
	1/2,000	1/20,000	1/60,000	
M & B 693 :				
a	13	23	11	Confluent
b	0	20 (inf.)	80+	,,
Sulphonamide-P:				
a	170	134	54	,,
b	23	60	105	,,
Soluseptasine :				
a	77	74	300+	,,
b	44	700+	confluent	,,

"Inf." means that the plate was slightly infected.

(Branham, 1937; Neter, 1938). Soluseptasine has the least effect on the growth of the organisms, although it is active at a dilution of 1 in 20,000 in defibrinated blood.

Summary

The bacteriostatic effects of sulphonamide-P, soluseptasine, and M & B 693 have been examined.

All three drugs inhibit the growth of *Str. viridans* at a dilution of 1 in 2,000 in the presence of defibrinated human blood, M & B 693 doing so at a dilution as high as 1 in 10,000. None of these drugs is effective in the absence of leucocytes.

None of the drugs exhibits any bacteriostatic effect on *Staph. aureus*.

The growth of *N. gonorrhoeae* is retarded by all three drugs in the presence of leucocytes. In deleucocyted blood soluseptasine still exerts a strong bacteriostatic effect on the organism.

All the drugs are effective against *N. meningitidis* in the presence of corpuscles—in the case of M & B 693 at a dilution of 1 in 60,000. That drug is active at a dilution of 1 in 60,000 even in the absence of blood.

The dependence of these drugs on the presence of leucocytes is in agreement with the findings of Fleming (1938).

From the evidence set forth above it appears that M & B 693 may prove the most useful therapeutic agent in cerebrospinal fever and in conditions arising from infection with *Str. viridans*. Soluseptasine seems the most satisfactory for dealing with *N. gonorrhoeae*.

The drugs used in the above experiments were supplied by Burroughs Wellcome (sulphonamide-P), Dr. Ewins of May and Baker (M & B 693), and Dr. F. G. Hobson, Radcliffe Infirmary (soluseptasine). We wish to express our thanks for these gifts.

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C. D. De Langen, J. C. Boswijk, and C. L. C. van Nieuwenhuizen (*Nederl. Tijdschr. Geneesk.*, **82**, 4970) record an outbreak of ten cases of pellagra in female patients in a mental hospital. Six had refused food, three had already suffered from gastro-intestinal disturbances, and one was under treatment by cardiazol. Nine of the patients were treated with nicotinic acid in doses not exceeding 200 mg. daily; all recovered without any severe toxic symptoms. One patient who was not so treated died.

SPONTANEOUS HYPOGLYCAEMIA

WITH REPORT OF A CASE

BY

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The syndrome of spontaneous hypoglycaemia is one that has received comparatively little attention in English medical literature, although numerous cases have been reported in America, Australia, and Europe; nor has it found a place in the standard textbooks of medicine in this country. Wauchope in her critical review (1933) quotes only one English case, that of Moore and his colleagues (1931), in which the syndrome resulted from amylaceous dyspepsia. Full descriptions of the clinical and pathological features of this condition have been given by several American authors, notably by Gammon and Tenery (1931) and Seale Harris (1933), who have also reviewed the literature; while in the last seven years eight cases have been reported in this country.

Review of English Literature

Ramsbottom and Eastwood (1932) recorded their experience with a woman aged 44 whose condition had been diagnosed by Dr. Eurich at the Bradford Royal Infirmary in 1930. This was a somewhat unusual case, in that Argyll Robertson pupils and extensor plantar responses were present in the intervals between attacks without any evidence of syphilis. At laparotomy no pancreatic abnormality was found, but an infected gall-bladder and appendix were removed, after which the patient improved temporarily, only to relapse in spite of a daily dose of 1 lb. of glucose. Barnard (1932) described a case in a woman aged 40 who died in hypoglycaemic coma, and in whom an adenoma of the islets of the pancreas was found; treatment with glucose had been tried with temporary relief, but glucose was ineffective in the final stages. Cairns and Tanner (1933) reported the case of a woman aged 52 who, after two years' history of recurrent "giddy" attacks, passed into hypoglycaemic coma. The blood sugar was found to be 41 mg. per 100 c.cm., and the patient died in spite of intravenous glucose injections, adrenaline, and pituitrin. Necropsy revealed an adenoma of the pancreas.

The case of a woman aged 41 who had previously received insulin treatment for diabetes was recorded by Griffiths and de Wesselow (1933). The sugar-tolerance curve of this patient was of the "lag" type with a final hypoglycaemia, and the clinical course and laboratory findings were noticeably erratic—features which were observed in some of Wilder's (1927) cases, and considered by Howland (1929) to suggest a malignant rather than a benign growth. There was no clear evidence of liver dysfunction, though on one occasion the adrenaline test gave negative results. Moore *et al.* (1934) recorded a case which they considered to be due to subacute parenchymatous hepatitis; they also gave the ultimate history of a previously reported case (1931), and mentioned having seen another case, in a man of 28, of "apparently true hyperinsulinism." One of the patients referred to by Jones (1935) as presenting mental symptoms due to hypoglycaemia was a man of 31, and the details given leave little doubt that he suffered from spontaneous hypoglycaemia of pancreatic origin.

We present below the records of another example of spontaneous hypoglycaemia. It is probable that the condition is not so rare as is generally supposed, and that as its features are more widely known it may be increasingly recognized, and experience with a larger number of cases may enable a truer assessment to be made of the possibilities of treatment.

Case Report

A man aged 41, a painter, was referred to one of us as a "peculiar epileptic." For the past eleven years he had suffered from attacks of dizziness and unsteadiness of gait. At first these occurred only once or twice a year, but they had increased in frequency latterly, so that in the past year he had had one or two a week, and in the week before his admission to the Bradford Royal Infirmary on February 27, 1938, they were of daily occurrence; his doctor described him as "a nuisance to the neighbourhood" by reason of his malady. The patient had previously been healthy except for an attack of influenza in 1918; he had begun to put on weight at about the age of 30, when symptoms first appeared, but his weight had remained stationary at about 13 stone for the last few years. His parents, four sisters, and one brother are alive and well, and do not suffer from any symptoms that might be ascribed to hypoglycaemia or diabetes.

NATURE OF THE ATTACKS

Attacks are almost always heralded by a sensation of tingling, which is felt first in the lips when he is eating, in the right hand when he is engaged in manual work, and in the feet when he is walking. If an attack begins while he is reading the newspaper the first sign would be that the words "run together." After these prodromal symptoms the commonest form taken by the attack is a sensation described as "muzziness of the head" accompanied by lack of concentration, slight blurring of vision, and some confusion. Occasionally hallucinations occur, and as a result of these "dreams" the patient exhibits unusual though never violent conduct. During an attack his speech is slow and drawling and the attention wanders; there has never been any sphincter disturbance, abnormal sleep, headache, convulsion, or loss of consciousness. On two occasions, the first many years ago and the second fourteen months ago, the patient found that the right arm and leg became useless during an attack; the face has never been affected. The paresis lasted a few hours on each occasion and disappeared gradually.

More severe attacks have occurred, usually when walking home from work; tingling in the feet is followed by a drunken feeling and unsteadiness of gait, so that he leans for support on a wall or railing. The attack develops slowly enough for him to board a bus and reach his home; but here he collapses in a chair, feeling cold, faint, and confused, and often sweating. An attack may last for half an hour to one and a half hours, and always develops and passes off slowly. Most frequently attacks occur towards the end of the day's work, but they have also occurred before mealtimes and sometimes during a meal. The patient does not experience hunger during an attack, but he knows that if he takes food he can prevent a severe one developing, and he has formed the habit of having a mid-morning lunch at work for this reason.

EXAMINATION

The patient was a moderately obese subject weighing 13 stone, with an old-standing strabismus and myopia. The fat was of normal distribution, there was no unusual pigmentation of the skin, the hair was normal, as was the development of the sexual organs. Examination of the nervous system revealed no abnormal signs, while the only abnormality found in a general examination was a blood pressure of 170/100 mm. Hg. The urine and the cerebrospinal fluid were normal, and the Wassermann reaction was negative.

From a description of the attacks hypoglycaemia was suspected, and this view was confirmed on reducing the diet the next day. Whilst having his tea on this day the patient developed a typical attack in which the blood sugar was found to be 40 mg. per 100 c.cm. The sugar-tolerance curve after 50 grammes of glucose gave the following results:

Time	Before Sugar	30 mins.	60 mins.	90 mins.	120 mins.
Blood sugar (mg. per 100 c.cm.)	25	40	92	75	66

There was no glycosuria during the test, but sugar was found on one occasion in the early morning urine.

Further investigations to determine the aetiology of the hypoglycaemia were undertaken; the stools contained no undigested starch, and no diarrhoea was present. Pituitary function appeared to be normal, there was no radiological abnormality of the pituitary fossa, and the fields of vision were normal. The basal metabolic rate gave a value of −3 per cent. A test meal showed a rapid emptying time and a normal acid curve. There was no evidence of diminished laevulose tolerance. After a dose of 40 grammes of laevulose the following figures were obtained:

Time	Before Laevulose	30 mins.	60 mins.	90 mins.	120 mins.
Blood sugar (mg. per 100 c.cm.)	31	31	28	24	20

Mobilization of sugar occurred normally after the subcutaneous injection of 10 minims of adrenaline:

Time	Before Adrenaline	10 mins.	20 mins.	30 mins.	40 mins.	50 mins.	60 mins.
Blood sugar (mg. per 100 c.cm.)	66	55	96	130	145	146	186

Discussion

Various authors have discussed the pathogenesis of hypoglycaemia, and its possible causes have been summarized by Wauchope (1933) as follows:

1. *Excess of Insulin.*—Therapeutic injections. Tumours and hyperplasia of the pancreas. Functional hyperinsulinism (idiopathic hypoglycaemia).

2. *Lack of Opposing Secretions.*—Disease of the suprarenal glands. Pituitary tumours: posterior lobe, anterior lobe (acromegaly). Myxoedema.

3. *Lack of Glycogen.*—Destruction of reservoirs: disease of the liver; wasting of muscles. Abnormal excretion of sugar: renal diabetes; lactation. Active depletion of stores: muscular exercise. Failure to replenish stores: starvation.

4. *Interference with Regulating Centre.*—Nervous disease affecting the pons. Overaction of the vagus.

In the present case no evidence had been obtained of disorder of the adrenal, pituitary, or thyroid glands; liver and gastro-intestinal functions were normal, and there was no renal diabetes. It seemed, therefore, that the cause must be sought in the pancreas.

From a study of the previously reported cases it appears that there is as yet no satisfactory criterion whereby the varieties of pancreatic hypoglycaemia may be differentiated. In the cases reported up to 1931 (Gammon and Tenery, 1931) the average duration of symptoms when a patient was first seen was two and a half years in the tumour group and four years in the non-tumour group, the longest periods being seven years and thirteen years respectively in the two groups. The erratic course of tumour cases has been stressed, but this has not been apparent in all such cases, although it might seem feasible that an adenoma or carcinoma, presumably exempt from nervous control, should show a fluctuation in its functional activity dependent upon variations in its rate of growth. From those cases in which the adrenaline response has been observed there is some reason to suppose that it is more often negative in tumour cases, but the difficulties in interpreting this test are pointed out by Cammidge and Poulton (1933). The latter incline to the view that lack of response to adrenaline cannot be due to pancreatic hyperfunction, and criticize Wilder's explanation that the adrenaline must be swamped by excess of insulin, on the grounds that a balance must always exist, and that this must always be susceptible to alteration on the addition of more adrenaline. If, however, Wilder's view is correct, a negative adrenaline response might indicate exhaustion of the adrenaline-supplying mechanism, or possibly a diminution in sensitivity to adrenaline. In either case it would be expected to denote the severity of the disease rather than its pathological basis, and this is borne out by the fact that adrenaline often fails to relieve severe hypoglycaemia from any cause. The state of affairs in the pancreas is not always capable of diagnosis even at laparotomy, for small adenomata may be missed (Ziskind and Bayley, 1937).

On the evidence available, therefore, we concluded that a definite pathological diagnosis could not be made, and that there was as yet no indication for exploratory laparotomy.

Treatment

Medical treatment is of course palliative. Its aim is to keep the blood sugar from falling too low, and also from fluctuating too violently. To assess the value of the different methods available we first observed the blood-sugar variations in the patient on an ordinary ward dietary, and the results are shown in Fig. 1.

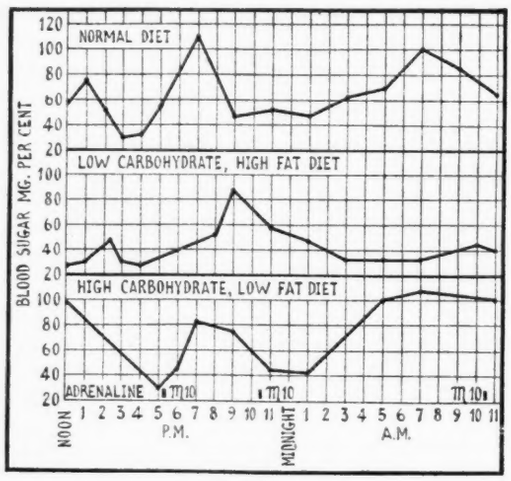

FIG. 1.

It has been suggested (Harris, 1933) that rational therapy should consist in measures which avoid stimulation of pancreatic activity. Accordingly the patient was given a diet consisting of carbohydrates 100 grammes, protein 70 grammes, and fat 160 grammes, and on the third day of this regimen the blood-sugar variations were again followed (Fig. 1). On the first day of this diet the patient felt worse than at any time since admission, but he had improved considerably by the fifth day. On the sixth day, however, he had a severe attack in which there was twitching of both legs but no other abnormal nervous signs. During all this period he complained of being "terribly tired." A diet of carbohydrates 500 grammes,

protein 70 grammes, and fat 70 grammes was then given, divided into seven meals. Subjectively his condition on this diet was better than with the previous one, though he still had "pins-and-needles" in the lips. The diet was then supplemented by injections of 10 minims of adrenaline at 5.30 p.m., 10.30 p.m., and 10.30 a.m., and the results of this appear in Fig. 1. A week later he had had no tingling of the lips for a few days, and stated that he would be quite satisfied if his present condition remained unchanged. He was discharged on the high carbohydrate diet, and ephedrine, ½ grain thrice daily by mouth, was substituted for the injections of adrenaline.

On July 7, 1938, the patient was readmitted. Subsequent to his discharge he had had no attacks for six weeks, but had had a total of four attacks in the whole period of fifteen weeks. His weight had been stationary, and his general health and temper had improved: the blood pressure remained at 170/100 mm. Hg. The patient stated that on each occasion an attack had been the result of a delayed meal, and that with greater care he could have prevented them. The ephedrine was stopped temporarily and the daily blood-sugar variations again recorded while the patient was taking the 500-gramme carbohydrate diet. The results given below indicate that a higher blood-sugar level had now been attained, and it was also noted that prodromal symptoms of hypoglycaemia occurred at a higher level of blood sugar than previously, suggesting that during the previous weeks the nervous system had become accustomed to more normal conditions.

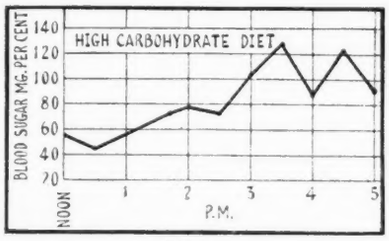

FIG. 2.

The duration of the response to ephedrine was next determined, and as it was found to cause a rise of blood sugar, beginning about three hours after administration and lasting two hours, the patient was discharged on July 15, 1938, with instructions to take ephedrine tablets four times daily at approximately 8 a.m., noon, 5 p.m., and bedtime. His diet was rearranged to contain 650 grammes of carbohydrate, divided into ten meals.

In view of the good response to medical treatment exploratory laparotomy was further postponed.

Commentary

One of the most striking features of this case is the extraordinarily low blood-sugar readings obtained in the absence of severe hypoglycaemic symptoms. Figures in the region of 30 mg. per 100 c.cm. were recorded several times, and even when the blood sugar reached the level of 16 mg. on one occasion and 20 mg. on another the patient was not in coma. So far as we are aware this has not been recorded before. (The blood sugar was estimated by a modification of the method of Calvert (1924) using the Zeiss photometer, and the technique was checked by estimation of glucose solutions of known strength.)

It will be noted that the point at which tingling or weakness first appeared was often determined by use of the part—for example, tingling of the legs when walking and of the lips when eating—suggesting that some local product of muscular metabolism was the determining factor. Generalized muscular weakness of sudden onset in familial periodic paralysis is known to be associated with a fall in blood potassium, and an attack in this condition may be brought on by administration of glucose or insulin, or both together (Aitken and Allott *et al.*, 1937). In chronic hypoglycaemia the same biochemical abnormalities may occur, and it is possible that in the case here recorded the extra demand of neuromuscular activity interfered with the already disturbed potassium balance and produced the symptoms noted. The fall in the blood potassium was confirmed in the present case, for during a hypoglycaemic attack in which the blood sugar was 30 mg. per 100 c.cm. and weakness of hand-grip was evident the serum potassium fell from its normal of 21.4 mg. to 15.9 mg. per 100 c.cm. Unfortunately the effects of administration of potassium salts have not been observed.

Another unusual point concerns the time of onset of symptoms. Most cases show symptoms when fasting, and especially just before meals, but here it was repeatedly observed that the attacks began just after the patient had started to eat. This might be merely another example of the local effects of exercise mentioned above, the blood sugar being already low, or it might be due to an actual lowering of the blood sugar, presumably by means of a conditioned reflex. The same effect was noted by Howland (1929). Personal experiments on a normal subject, however, lent no support to the hypothesis that a reflex lowering of the blood sugar occurred when a meal was contemplated. Moreover, Howland's case was one of carcinoma, which could not be expected to be susceptible to nervous impulses.

Lastly, it may be pointed out that hemiparesis is a recognized though uncommon feature of hypoglycaemia, and it is important to recall the fact that this rather alarming occurrence may be a transient manifestation of the condition. We have come across similar attacks in a diabetic boy aged 11 years who was receiving protamine insulin, and in an adult aged 30 under similar conditions.

Summary

1. References to spontaneous hypoglycaemia in the English literature are reviewed.

2. The records of an additional case are presented and the difficulties of diagnosis and treatment discussed.

3. Certain unusual features in the symptomatology are commented upon.

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Clinical Memoranda

Treatment of Delayed Union of the Carpal Scaphoid

(WITH SPECIAL PLATE)

In the *British Medical Journal* of December 4, 1937, Mr. R. Salisbury Woods described a case of union of the carpal scaphoid after six weeks' delay in treatment. The excellent result obtained in his case induced me to trace for review a patient treated in a similar conservative manner about a year previously. In this case the period between the accident and the institution of efficient treatment had been much longer—nearly three years—and the period of treatment had been correspondingly extended. The result, however, proved very satisfactory, and the publication of such a case may encourage others to consider conservative measures when treating this most troublesome injury.

CASE HISTORY

In April, 1936, a man aged 30 was referred to me because of increasing pain and disability of the right wrist. The history was that three years previously he had skidded on a motor-bicycle and fallen on his right side with his hand still grasping the handle-bar. The right wrist was damaged and a diagnosis of "sprained wrist" was made. Treatment was limited to the usual home hydrotherapy efforts.

After six months of continued pain he sought advice elsewhere, and a radiograph was taken which showed a transverse fracture of the carpal scaphoid. He was told that the fracture would probably unite. He managed to carry on at his work as a metal turner, but pain persisted. When seen by me three years after the accident he stated that the pain was steadily increasing and had been much more severe during the last six months. A radiograph taken at this date (Plate, Fig. 1) showed an ununited fracture of the scaphoid, with some vacuoles in the bone. There was no arthritis.

I discussed the question of surgery with him as I thought that the damage was of such long standing as to make it unlikely that conservative measures would help. However, he was extremely keen to keep at his work, and agreed to give prolonged splinting a trial.

A leather-covered aluminium "cock-up" splint was therefore devised, of which the dorsiflexed portion fitted into the centre of his palm, and the arm portion was kept in position on the flexor surface of the forearm by a laced leather casing (Fig. 2). This allowed complete freedom of movement to all fingers and to the thumb. He wore this continuously for six months, being able to do all his work as a metal turner. The splint was removed only for the purpose of washing his hand, and during such times dorsiflexion was strictly maintained. There was some slight skin trouble from pressure and sweat, but with care and the use of methylated spirits and a dusting powder he was able to prevent the skin from breaking, and he strictly kept the correct position for six months. All pain disappeared within three weeks, and he felt but little inconvenience from the wearing of the apparatus.

A radiograph taken at the end of that time (Fig. 3) showed apparent union, and, no clinical sign of tenderness being elicited, the splint was discarded.

On reading Mr. Woods's case I re-examined the patient in February, 1938. He stated that he had had no further pain and that functionally his wrist was normal. Clinical examination confirmed this, and a further radiograph showed "bony union of the scaphoid with complete continuity of the internal border of the bone. There was considerable irregularity of the external surface representing the vacuolated areas noted at the first examination."

COMMENTARY

The surgical procedures suggested for the treatment of delayed union of these cases are by no means simple or devoid of risk, and the results obtained are not universally satisfactory. So long as the diagnosis of "sprained wrist" is made without the exclusion of a fractured scaphoid by *x*-ray films, so long will these cases of delayed union occur. It would therefore appear that surgery in these cases should not be advised until a reasonably prolonged trial of conservative measures has been made. A man's ability to carry on at his work during such treatment is of great importance.

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The Diagnosis of Large Ovarian Cysts

(WITH SPECIAL PLATE)

The differential diagnosis of an ovarian cyst is usually perfectly simple, but there are a few cases in which laparotomy must be undertaken to confirm it.

For purposes of description it is customary to divide ovarian cysts into three groups according to their size: (1) the small ovarian cyst, capable of lodging in the pelvis; (2) the medium-size cyst floating free in the abdominal cavity; (3) the enormous cyst filling the abdominal cavity, displacing the intestines. It is with the third group, or largest tumour, that this note deals.

The differential diagnosis between ascites and an enormous cyst which completely fills the abdomen, flattening the gut against the posterior abdominal wall and having a single large loculus in front, may be impossible by ordinary clinical examination. Such a cyst will not show the abdominal wall lifting off its capsule in respiration; it will give rise to dullness all over the abdomen, and often it is possible to elicit a fluid thrill through it. Ascites may cause dullness which is absolute and complete over the whole abdomen owing to the gut being "drowned" in the excess of fluid; as a result the sign of shifting dullness cannot be elicited. Paracentesis of the abdomen is of no help, for cells may be present in both ascitic and ovarian fluid, and pseudomucin does not always appear in the latter.

It may be impossible clinically to distinguish between marked obesity and neoplasm, for the former gives rise to abdominal protrusion, a feel of resistance on palpation, and, occasionally, complete dullness on percussion. The diagnosis is readily made, however, by injecting iodatol (B.D.H.) through a Keyes-Ultzmann cannula into the uterine cavity. An anaesthetic is rarely necessary, but the patient must be transferred to a radiographic department and placed on a table fitted with a Potter-Bucky diaphragm. After the insertion of the cannula into the uterus, preparation to take the radiograph should be made before injecting the iodatol. Two or three films should be taken, without moving the patient, after the injection of varying amounts of iodatol—namely, 4 to 5 c.cm., 10 c.cm., and 15 c.cm. It is essential that enough oil be injected to ensure the filling of the uterine cavity and the tubal lumina.

In the case of ascites or simple adiposity the lengths and outlines of the Fallopian tubes would be approximately equal (Plate, Fig. 1), but in the case of a large ovarian cyst one tubal lumen would be seen to be greatly elongated and to extend above the brim of the pelvis in the direction of the upper abdominal cavity (Plate, Fig. 2).

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An Unusual Case of Bilateral Digital Epiphyseal Deformity

(WITH SPECIAL PLATE)

The rarity of this condition seems to me to warrant its publication. I personally have not encountered another example.

The case is that of a healthy girl aged 12. At the age of 3 she fell downstairs, but sustained no injury to her hands. For the past two years deformity of the index fingers has been noticed at the proximal interphalangeal joints, with medial deviation of the fingers. The joints have become thickened, and she was brought to see me at the Orthopaedic Institute, Oldham, on account of pain and deformity.

X-ray examination (see Plate) revealed a medial subluxation of the middle phalanx and a peculiar angulation of the epiphysis of the middle phalanx. There is, so far as one can see, no fragmentation of the epiphysis. The base of the shaft of the middle phalanx is markedly indented by the angular epiphysis. The distal articular extremity of the proximal phalanx is a little "pointed" on its medial side, and this "point" corresponds with the apex of the epiphyseal angulation.

The aetiology is obviously a matter for speculation. One may exclude trauma, as the condition is bilateral and symmetrical, and no other finger or epiphyseal plate is involved. Although the deformity has only been noticed for the past two years it is quite possible that the condition may be due to an abnormal intra-uterine position of the proximal interphalangeal joints of the index fingers, producing a mild subluxation. The position could be maintained *in utero* by the terminal phalanx of the index finger being tucked under and grasped by the flexed middle finger.

Manchester. HENRY POSTON, M.Ch.

Congenital Deformities of Hands and Feet

(WITH SPECIAL PLATE)

The following case, radiographs of which are reproduced in the Special Plate, may be considered of sufficient interest to be placed on record.

The case is that of an Egyptian boy, aged 11, of the fellahin class, who came to this hospital for treatment for ankylostomiasis. It is curious that both feet and both hands should all have such similar congenital deformities.

He can grip quite strongly with his hands and perform all necessary actions. As he is illiterate he cannot write, anyway. He stands and walks well, and does not get unduly tired, though he has no arches to his feet. He does not go about barefoot like most of his fellows, but wears a pair of large old shoes to hide his feet, which rather resemble those of an ostrich or emu. The outlines of the soft parts and the bony defects can be seen quite clearly in the radiographs, for which I am indebted to the radiologist of this hospital.

C.M.S. Hospital, Old Cairo. E. N. CALLUM, F.R.C.S.Ed.

Full-time Extra-uterine Pregnancy

(WITH SPECIAL PLATE)

Cases in which extra-uterine pregnancy reaches full time without tubal rupture are seldom met with. The case here recorded was of this variety, but our main object in making this brief communication is to exhibit an *x*-ray photograph which is probably unique.

CASE RECORD

The patient was admitted to hospital with a history that she was beyond full time and labour had not come on. Throughout the course of pregnancy there had been no symptoms to suggest that pregnancy was other than normal. As a result of abdominal examination it was thought that the patient was about seven and a half months pregnant and that she had probably erred as to the date of confinement. As time went on it was found that the child was not increasing in size, and as the foetal heart could not be heard it was decided that an examination should be made when the patient was under the influence of a general anaesthetic. It was then discovered that the case was one of extra-uterine pregnancy which had gone beyond full time without tubal rupture. We thought that, if this were so, an interesting *x*-ray photograph might be obtained, and consequently the uterus was filled with lipiodol so that that organ and the abdominal contents might be photographed by Dr. John Reid. It will be seen from the illustration on the Plate that some of the lipiodol not only filled the enlarged uterus but passed along the left Fallopian tube. As the lipiodol had failed to enter the right tube it was concluded that this structure contained the foetus. In the radiograph the child can be seen lying transversely. At operation it was found that loops of ileum and omentum were adherent to the unruptured right Fallopian tube. The vessels in the omentum had undergone considerable enlargement. When these attachments had been liberated the tube with its contents were removed *en masse*. On opening the tube it was found that the liquor amnii had been absorbed. The patient made an uneventful recovery.

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Accidental Vaccination of the Nose

(WITH SPECIAL PLATE)

Accidental vaccination is a well-known occurrence. We are recording this case, however, because it presented such a dramatic picture that it might have given rise to considerable difficulty in diagnosis.

CASE HISTORY

When seen in consultation on March 8 last the patient, a married woman aged 31, gave the following history. For about six weeks she had had a small fissure at the corner of her left nostril. On February 28 she began to notice enlarged and painful glands in her neck, especially on the left side. Two days later her nose became swollen and rapidly got worse, with vesiculation on the lower end and such oedema that her eyes were almost closed. She felt ill, and had a temperature of 101°, with throbbing pain in her nose. Further inquiry into the history revealed that she had had a baby vaccinated on February 12, and the dressing had first been removed on the 23rd—that is, five days before the mother's first symptoms. The mother had never been vaccinated.

On examination she presented an acute inflammatory lesion of the nose, with such a degree of oedema of the face that one's first thought was of anthrax. The nose itself was bulbous at the tip and crusted, the margin of the ulcerated area showing pustules resembling those of variola. On the left cheek was a small group of vesicles (see the photograph, which unfortunately was taken after the most severe oedema had disappeared).

The patient was confined to bed after receiving a small dose of *x* rays (150 *r*). She was treated with perchloride of mercury fomentations and given 7½ grains of prontosil thrice daily. A week later, on March 14, the swelling and inflammation had subsided and she merely had a little crusting. When seen again two months later the lesions had completely healed, but she was left with a group of small round superficial scars on the tip of her nose.

An attempt was made during her illness to detect the virus by inoculating a rabbit, without definite result; but as the lesion was secondarily infected and had previously been treated with antiseptics a positive finding was unlikely.

COMMENTARY

This case when first seen was so fierce in appearance that it might easily have been mistaken for a more serious condition. The intense surrounding oedema suggested a malignant pustule, but there was no central black slough. Another possibility was a primary chancre, but the rapidity of onset, the history of vesiculation, and other points made this unlikely. Finally one considered the diagnosis of a carbuncle, but here again the vesicular onset and the pustular margin of the lesion did not quite meet the case. On the other hand, the history of a child's recent vaccination and the resemblance to an ordinary vaccination lesion made the diagnosis fairly probable, and this was confirmed by the course of the illness and the final scar that resulted.

S. G. BEDFORD, M.B., Ch.B.
Leeds. F. F. HELLIER, M.A., M.D., M.R.C.P.

Spasm of the Central Retinal Artery

The following case notes may be considered of sufficient interest to merit publication.

CASE RECORD

On August 31, 1938, at 6 p.m., a man aged 57 consulted me about sudden blindness in his right eye. He said that two hours previously, while motoring, he discovered he could not see with his right eye, and that closure of the left eye almost led to an accident.

On examination I found that his left eye had 6/9 vision and in all respects was quite normal, except for a low degree of retinal arteriosclerosis. The right eye showed a semi-dilated pupil which did not react directly to light. Vision in this eye was reduced to bare "perception of light." Ophthalmoscopic examination revealed that the retinal arteries were markedly contracted, that the calibre of the veins was about normal, and that there was generalized oedema of the retina, especially around the posterior pole. I made a diagnosis of embolism and advised immediate operation. To this he agreed. He was a healthy man with no history of illnesses.

The patient was admitted to hospital and I performed the following operation at 6.20 p.m. I first gave him a retro-bulbar injection of acetylcholine. Ten minutes more were taken up in preparing the eye and washing it. Five per cent. cocaine was instilled into the eye. A keratome was pushed into the anterior chamber and the aqueous rapidly evacuated. He was then given an ampoule of amyl nitrite to breathe, and massage of the globe was carried out. I had hoped to watch events in the fundus on the table, but the cocaine produced some exfoliation of the corneal epithelium and so prevented a clear view. The eye was bandaged and the patient put to bed. Next day with the affected eye he could see the stripes on my tie and see "hand movements." On the following day—that is, two days after the operation—he could count fingers at three feet. His visual field was full.

The patient was sent home on September 5, and on the 6th his doctor informed me that his blood pressure was 220 systolic. On September 7 vision in his right eye was 1/60, and his visual field was normal. The screen test showed a small central relative scotoma extending to 5 degrees around the fixation point. The patient was put to bed and received treatment for his raised blood pressure.

I last saw him on September 30. His right vision was then 3/60, but only by holding his eye in extreme abduction. I expected to find a sector defect in the field corresponding with the branch blocked by the embolus. Absence of such defect has made me alter my diagnosis to one of spasm.

Wallasey. W. DUNLOP HAMILTON, M.B., B.Ch., D.O.M.S.

Reviews

MANUAL FOR BOARDING-SCHOOL DOCTORS

Medical Practice in Residential Schools. A Manual for Medical Officers and Others. By F. G. Hobson, D.S.O., D.M., F.R.C.P. (Pp. 284; 8 figures; 3 plates. 10s. 6d. net.) London: Humphrey Milford, Oxford University Press. 1938.

Medical men attached to boarding-schools have long felt the want of a textbook devoted to their special needs, both in dealing with the particular diseases which are common to such institutions and with the administrative problems they present. In *Medical Practice in Residential Schools* Dr. Hobson has produced such a work, which will assuredly find its place on the shelf of every school doctor for handy reference. The chapters dealing with the disorders and diseases of school age are concisely written and in a manner the school doctor will find most helpful. The particular methods of organization in times of epidemic infection which are needed for efficient control and management are fully dealt with and cover very thoroughly this responsible side of a doctor's duties. And no one who has not had the experience of dealing with an epidemic in a boarding-school can appreciate how grave those responsibilities are and how much they tax the resources of those in charge. The chapters on measles, diphtheria, and the streptococcal infections are of particular interest and value, if one may select from so many excellent examples.

The book will certainly become a standard work of reference, and in future editions we shall hope to see a wider field covered. In the first place there is a sense of disappointment that from the preventive aspect alone more emphasis is not directed to the need for physical education as a necessary part of school life. The duty of training and developing the adolescent body to its best capacity is now a recognized part of education—as should be the teaching of biology. If we are to teach a boy or girl to cultivate health in a positive sense the foundation of such knowledge must be instruction in the functions of the body and mind. The chapter on nutrition, excellent as it is, seems not sufficiently directed to school problems. The school doctor is often not consulted at all in such matters. Economy at the expense of food, extras (especially fresh fruit as an extra), cooking and serving meals, the relation of meals to games and work, are all special problems bearing on school work. On many of these points the school medical officer's hands would be strengthened if he could quote an accepted authority.

A chapter could well be written on the basic handicap under which the school doctor labours by virtue of his position. He holds his post at the will and pleasure of the headmaster. He has as much voice in deciding questions of diet, bed spacing, and the like as he can persuade his headmaster to allow him, which is sometimes none at all. Heads of schools who have their own ideas on health questions are not unknown. The headmaster who "believes in" this or does not "hold with" that has no one to say him nay. Again, what applies to headmasters is even more true of parents. The unfortunate doctor has to pay lip service to every kind of crank and fetish in the field of treatment of disease. One small point we would plead for. The decision as to paracentesis of the drum in cases of otitis media should be based on evidence of rising pressure shown by bulging of the drum.

Why may we not have this point in our textbooks and impressed on the student?

We commend Dr. Hobson's book whole-heartedly to all who are interested in this branch of medicine.

CURTIS'S "GYNECOLOGY"

A Textbook of Gynecology. By Arthur Hale Curtis, M.D., Professor and Chairman of the Department of Obstetrics and Gynaecology, Northwestern University Medical School. Third edition, reset. (Pp. 603; 318 figures. 30s. net.) London: W. B. Saunders Company. 1938.

All who are already familiar with this textbook will be warm in their welcome of the latest and best edition. New readers, be they students or graduates, will find it most complete and satisfying. The previous work has been entirely rewritten, with eight new chapters added. These include an excellent introductory section dealing with the female pelvic anatomy, followed by a brief survey of the embryology of the generative organs. Probably the most valuable addition is the section dealing with gynaecological endocrinology, in which the present conception of hormonal activity and interrelationship is lucidly summarized and well illustrated. The chapter entitled "The Gynecological Patient Presents Herself" remains a feature of the book. Students and practitioners alike will find these pages filled with invaluable counsel, dealing as they do with those fundamental, but often overlooked, principles upon which both sound training and sound practice must be based.

Reference to sulphanilamide therapy, with due emphasis on the dangers of indiscriminate and uncontrolled administration of the drug, brings the chapter on "Infectious Processes" up to date. In dealing with the relation of cervical infection to sterility the author advocates amputation of the cervix in those cases of cervicitis in which no other cause for the sterility can be discovered, but makes no mention of the dangers of subsequent abortion should a high amputation be performed. The section dealing with puerperal sepsis gives emphasis to autogenous infection from vaginal organisms at the expense of the "droplet infection" theory. Reference to the valuable bacteriological and clinical work on puerperal sepsis performed in recent years at the Queen Charlotte's Isolation Hospital would improve this section of the book.

Tumours of the uterus and adnexa are admirably dealt with from every aspect, including a valuable and concise section dealing with the place of radiation therapy in the treatment of fibromyomata. The position of radical surgery and radiation in the treatment of carcinoma of the cervix is impartially discussed. Due and timely emphasis on the danger of radium in unskilled hands precedes a summarized account of the various techniques in common usage. Injuries to the pelvic floor and vaginal plastic surgery are splendidly described and illustrated. Sterility is fully discussed, and the arresting, though debatable, claim made that the best time to diagnose the condition is before marriage. Rubin's test is given preference to radiological investigation of the tubes, but the danger of wrongly interpreting the results of the former test is not mentioned, although in the past many patients have been agreeably surprised and many surgeons embarrassed by Nature's reply to the verdict of "blocked tubes."

From beginning to end this is an excellent work, and must be regarded as one of the finest textbooks of gynaecology.

CHEVALIER JACKSON

The Life of Chevalier Jackson. An Autobiography. (Pp. 230; illustrated. 15s. net.) New York and London: The Macmillan Company. 1938.

The childhood and youth of Dr. Chevalier Jackson were passed in circumstances so straitened as to amount at times to actual want. His father had become saddled with a heavy load of debt, due to embezzlement by one in whom confidence proved to be misplaced, and the early years were overshadowed by this family misfortune. It has been said that a wealthy parent can give his son everything except the stimulus of poverty, but the reverse is not true because, in spite of *res angusta domi*, the parents of Dr. Jackson provided him with a very happy life at home. The tale of his sufferings at school and of the barbarous conduct of the older boys, as related in his autobiography, makes painful though fascinating reading, and the wonder is that the frail youth survived such treatment. The means by which the poor young man maintained himself as a student of medicine command admiration, and his adventures as a vendor of medical books, as a cod-fisher, and as a sea-cook prove his capacity both for endurance and for spinning a good yarn. There is not much told about the very early years of practice, but the determination to become a specialist was soon reached, and Dr. Jackson made a voyage to Europe in a Dutch ship in order to visit Morell Mackenzie in London. The horrors of that voyage are vividly described, but there is scarcely anything related about the sojourn in London, of which English readers would have been interested to know more. From this point onwards the career of Dr. Jackson is better known. The development of bronchoscopy at Pittsburgh, the translation to Philadelphia, and the creation of the professorial chairs are familiar to the medical world; but the financial difficulties and the recurring threats of pulmonary breakdown which had to be overcome are less well known.

Dr. Jackson has become a man with a mission, the mission being the spread of safe bronchoscopy, but he has had other missions as well. One of these was the struggle to get household lye, the cause of innumerable oesophageal strictures in American children, labelled as a poison. The ultimate achievement of this was attained in the face of a dead weight of passive obstruction rather than active opposition, and required an almost incredible amount of work, time, and money. Another interesting chapter of this autobiography tells the views of the author upon how assistants should be treated. These views have brought abuse and ridicule upon him, and while sympathizing with the liberality and generous spirit upon which these views are based and were put into practice, it must be admitted that they appear somewhat exaggerated. The assistant who could stand for long such treatment in full measure as here described without being spoiled would surely be something of a superman. There is a curious paradox in this book that while holding such views Dr. Jackson says scarcely anything about his assistants personally. For the reason given he must have the gift of choosing for assistants those with a touch of the saint in their composition, and the reader would have liked to know more of his personal association with them. Perhaps the reason for this omission is that it is only one of many, for the book might easily be double its length without tiring the reader. Dr. Jackson has been cunning enough to leave him wishing for more—more delightful tales and more brilliant illustrations—but he gets a sufficient picture of the man. The simplicity of his life, the beneficence of his work, and the greatness of

his achievement recall something of Lister, and like that of Lister his work has not gone unrecognized during his own lifetime, as he freely and gratefully acknowledges.

To write an autobiography modestly, yet without false modesty, to record his accomplished works in simple language, and to present a vivid picture of heart-breaking trials, strenuous activity, and brilliant success is the feat accomplished in the *Life of Chevalier Jackson*.

THE HUMAN FOOT

The Foot. By Norman C. Lake, M.D., M.S., D.Sc., F.R.C.S. Second edition. (Pp. 366; 113 figures. 12s. 6d. net.) London: Baillière, Tindall and Cox. 1938.

It is agreeable to find friendly relations existing between reviewer and reviewed, particularly when the former has to remain anonymous. When the first edition of Mr. Norman Lake's book was reviewed in this journal on February 22, 1936, we described it as a valuable contribution to an important subject; the hope was expressed that a second edition would be called for, and we ventured to suggest certain modifications. Mr. Lake has been good enough to quote from our review in the introduction to the second edition, and he has made some of the alterations that were suggested. There is, for example, an excellent chapter on club-foot, and a short but useful list of references at the end of the book. The section dealing with flat-foot is still of outstanding merit. The theory that muscle tone and not the ligaments is chiefly responsible for maintaining the form and resilience of the foot is held by many orthopaedic surgeons, particularly Bankart. The reviewer (an orthopaedic surgeon who at one time believed that muscles were all-important in connexion with flat-foot) finds Mr. Lake's arguments in support of the opposite view more convincing than ever; and for this reason alone the book is commended to the attention not only of the general reader but of the orthopaedic surgeon as well. Morton's important observations have been included in the section dealing with development, and it is fair to say that great trouble has been taken to make this second edition a distinct advance on the first. It looks as if "Lake on the Foot" will soon come to be regarded as a standard work; it is one we recommend without hesitation.

TRAUMATIC HEART DISEASE

Subacute and Chronic Pericardial and Myocardial Lesions due to Non-penetrating Traumatic Injuries. A Clinical Study. By Erik Warburg, M.D. With a Short Biography of Oluff Borch (Olans Borrichius) by Torben Geill, M.D. (Pp. 147; 16 figures, including 8 plates; frontispiece. Kr. 14.) Copenhagen: Levin and Munksgaard; London: Humphrey Milford, Oxford University Press. 1938.

Cardiac symptoms are common following trauma, both when the trauma involves the chest and when it does not, and although a symptom such as palpitation in these circumstances will often indicate a nervous rather than a primary cardiac disturbance, the subject of Dr. Warburg's monograph is ripe for investigation. In the first part of the book the literature of the last 250 years is surveyed, and records of about 200 cases which survived for six days or more. Some of these records are extremely meagre, others are unconvincing, and a few have no apparent right to be included at all—for example, those in which tachycardia was the only finding or shortness of breath the only symptom. At least half the records were made before the days of radiography and electrocardiography, and the absence of post-mortem records also in the majority renders them of little scientific value. Detailed reports are given on the author's own cases, numbering thirteen. These include cases of coronary occlusion, angina of effort, and auricular fibrillation developing after trauma. The majority of these undoubtedly had chronic cardiovascular disease prior to the accident, but some, in particular those developing fibrillation, showed nothing to indicate that they had any previous disease.

Dr. Warburg's criteria for the diagnosis of traumatic heart disease do not seem to be sufficiently exacting, but his contention that the condition is much commoner than is generally admitted may be true, and his monograph is a contribution to a difficult subject which appears to deserve wider investigation.

Notes on Books

Occupational Treatment of Mental Illness, by Dr. J. IVISON RUSSELL (Baillière, Tindall and Cox, 6s.), is a practical handbook of occupational therapy. After a warning as to the limitations of mental patients, especially in respect of fatigue, a very brief description is given of the sort of patients for whom this form of therapy may be prescribed. General principles are then dealt with, including the adjustment of patient to occupation and occupation to patient. Occupations other than in the workshops are discussed, and the second half of the book is given up to a detailed description of the equipment and working of the various shops. A list of firms supplying the various material is appended. Obviously this is a valuable handbook for all those interested in occupational therapy, whether in mental or in other hospitals.

A Manual of Surgery for Nurses, by Mr. CHARLES WELLS (Edinburgh, E. and S. Livingstone, 10s. 6d.), sets a high standard and is an attractively produced work of its kind, but we doubt whether it is justifiable or economically sound to burden the hard-working probationer with such considerations as the radiographic appearances presented by gastric and duodenal ulcers or the differences in shape of the bismuth swallow in cases of œsophageal cancer and cardiac achalasia. Diagnosis is surely better left outside the scope of nursing, particularly when a crowded curriculum already calls too much upon time that might more profitably be spent in the practical work of attending to the sick. The part of the book dealing with needles, sutures, ligatures, and gloves, on the other hand, might with advantage be expanded, since this is really the surgery which nurses require to know well. The statement that thread and silk are sometimes used as ligatures for economy in place of catgut is misleading, especially at a time when the use of catgut, except in infected cases, is becoming reminiscent of the grosser methods of bygone times. The book is well illustrated by good line drawings and the print is clear.

Biology is being increasingly taught as a routine subject in schools, and the study of heredity is rightly regarded as an indispensable part of education. George Philip and Son, Ltd., have prepared for the Eugenics Society a series called the *E.S. Heredity Charts* to show the fundamental facts in the processes of origin and inheritance. Six charts are available, and show respectively the processes of cell division, Mendelian inheritance in antirrhinums, simple dominance in rats, a pedigree of stationary night-blindness, the incidence of polydactylism in five human generations, and a pedigree of the famous rowing family of Phelps. They are about 3½ ft. by 2½ ft. in size, and are drawn in bold black lines, with colouring where this helps to elucidate the diagrams. The plain paper charts are sold at 1s. 9d. each, and an explanatory handbook may be obtained for half a crown. The contents of this will be helpful to the teacher in arranging lectures. The whole set costs 10s. 6d. net; more expensive sets are mounted on cloth and dissected, or fitted with rollers.

Nova et Vetera

THE SILENT PESTILENCE

There are people who decry the political aims of the League of Nations; but if any doctor or medical statesman doubts its international health work he will find in Dr. Chambers's well-written history of cholera in America[1] a proof of the value of international action in preventing what was horribly commonplace in the nineteenth century. The book gives a vivid summary of four great waves of cholera which spread over the United States from Europe. For half a century the communities on the expanding fringe of the Eastern States, up and down the great river arteries, were victims of a theory of epidemic invasion which it is hard for the inheritors of Pasteur even to picture. They showed the reactions of men blindly fighting the mysterious unknown. This book is the fascinating story of the break-up of an idea—the miasmatic and local origin theory, and the opium and calomel medication that summarized professional opinion.

Waves of Cholera in America

The first great wave came from Europe in 1832, on a ship full of Irish immigrants. It travelled rapidly south from Quebec to Montreal and New York along the trade routes that were mainly river valleys. Before long it reached the Ohio river, and then flew down the Mississippi to New Orleans, and only seven months after the first entry into Quebec had actually passed over to Cuba. Meanwhile, the U.S. Government was engaged in a war against the Black Hawk Indians. More terrible than rifles, the pestilence spread westward to Fort Buffalo and Fort Dearborn (Chicago), and fell on both the red man and his conqueror. In the following year the infection retraced its steps up the Mississippi on the Show Boats and freighters of Mark Twain. Dr. Chambers pauses to tell us how it carried off the white planter and the negro slave, and how fiercely the small communities, with their tradition of resistance to the tyrants of Europe, opposed measures of quarantine. Just as typhoid was mistaken for typhus, an unfortunate confusion arose between cholera and malaria, and we hear of baleful misconceptions about marshy land, mosquitos, and effluvia.

The second great epidemic reached America in 1849, after the year of revolutions had scattered refugees from Central Europe. By this time communication was much improved by the stage-coach, the railroad, and the Morse telegraph, and cholera spread as rapidly as the new agents. The gold rush to California moved simultaneously from two directions—via the Oregon trail from the east, and by sea, from the Isthmus of Panama. Still local boards of health fumbled and exhorted the inhabitants "to avoid night air and preserve a tranquil state of mind." There were medical heroes like Daniel Drake of Cincinnati, but they were powerless to compensate for erroneous theory.

Meanhile in Europe Virchow and Pasteur and Pettenkofer had done their work. The Atlantic cable connected the New World with the Old, and the American Civil War ushered in another frightful burst of cholera before new epidemiological ideas had time to spread. History repeated itself, and it seems that before the germ theory could be properly applied a last demonstration was needed to make it clear how the pestilence spread along lines of traffic.

Bacteriological Control

How the bacteriology of cholera dawned on the medical world is told by Dr. Chambers in his last chapter, "Miasma to Microbe," and we catch the older practitioners' mistrust in the face of Koch's postulates. At the International Medical Congress held in London in 1881 even young Dr. William Osler of Montreal said nothing more than that the talk of microbes was abundant. Koch went out to the banks of the Nile and searched intestinal tissues—until the epidemic suddenly ended. The Germans followed cholera to India and eventually isolated the comma bacillus. Meanwhile the pestilence had passed over Europe and America like a great war. The next time it came to New York Harbour the bacteriologist kept it out and a revolution had taken place in human intercourse.

The accent of medicine to-day is turning away from the parasite towards the host. The lessons of cholera and plague applied to transport by camel, ship, and plane are being extended to yellow fever and other infections, with the result that the travels of a restless age are comparatively safe. These measures have been discovered by science, and they form the only sphere in which civilized peoples seem to be able to act in concert.

Dr. Chambers's book will fascinate the epidemiologist; and the armchair reader, if he will take the trouble to have near at hand a map of the United States, may follow the pestilence up and down the great river and think of white colonial houses and two-funnelled paddle-steamers on the edge of virgin America. He may then be thankful that international health work makes these things virtually impossible to-day.

H. W.

[1] *The Conquest of Cholera: America's Greatest Scourge.* By J. S. Chambers, M.D. (Pp. 366: 39 illustrations: frontispiece. 4.75 dollars.) London and New York: Macmillan Company. 1938.

EARLY USE OF IODINE FOR GOITRE

The recent vogue of the "iodine locket" among the public is no new thing. Professor Harington,[1] quoting from St. Lager (1867), tells us that within a very short time of Coindet's therapeutic introduction of iodine in the treatment of endemic goitre in 1819, the public came to regard it as such an effective remedy that, doubtless encouraged by the patent medicine manufacturers of the period, they took to carrying little bottles of iodine hung around their necks like amulets. Burnt sponge, of course, had been used as a constituent of goitre remedies since classical times; but what is apparently the first account of the actual use of sea-salt as a goitre specific, or of the local application to the goitre of a substance containing iodine, occurs in *The History of the White Mountains*,[2] by Mrs. E. A. Crawford, first published in 1845. This gives an account of the early settlers in the hilly country of Maine and New Hampshire, on the slopes of Mount Washington, the highest mountain east of the Rockies. Mrs. Crawford tells how her grandfather, Eleazar Rosebrook, migrated with his family up from Massachusetts in the early seventeen-seventies, and paints a vivid picture of the difficulties and dangers encountered in making their home in this new territory, lately wrested from the Indians. They lived principally on animal food, since game, such as moose, deer, and bear, was plentiful. The meat they cured by drying or smoking. To quote Mrs. Crawford:

"One grand article wanted now was salt, which was scarce and hard to be got, and they could not well live without it in this fresh and mountainous country. Some families suffered considerably by their children having their necks swollen. The disorder was attributed to the want of salt, which was afterwards remedied, in a measure, by carrying them to the salt-water and giving them plenty of salt fish to eat and applying the skin of the salt fish to their necks, but they never wholly outgrew this trouble. I have heard my grandfather say that while living in Monadnock, at one time he went on foot to Haverhill, and bought one bushel of salt and carried it home, through the woods, on his back, a distance, at that time, as they followed the river the most of the way, of not less than eighty miles. Can this same country produce a man now, with such a wonderful power of muscle, and strength of mind, to endure this and not complain of its being hard? But such was the courage of these hardy new beginners that they did not mind trifles."

J. C. L.

[1] *The Thyroid Gland.* Oxford University Press. 1933.
[2] Hoyt, Fogg, and Donham, Portland, Maine, 1883.

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HEPARIN AND THROMBOSIS

The recent studies of blood coagulation are of immediate practical importance to the physician and the surgeon, especially the latter, and we welcome, therefore, the opportunity of printing in this issue the lecture on heparin and thrombosis delivered by Professor Charles Best of Toronto on his visit to England earlier in the year. We surveyed in these columns a few months ago[1] the work of Dam and others which indicates that the haemorrhagic tendency in jaundice and disease of the liver is due to prothrombin deficiency and can be repaired by the administration of the fat-soluble vitamin K. Prothrombin may be regarded as a ferment-precursor which, under the influence of calcium and tissue extract, is converted into the ferment thrombin ; thrombin then acts on fibrinogen to produce the clot or fibrin. The conversion of prothrombin into thrombin and the action of thrombin on fibrinogen can be inhibited by heparin. It is a moot point whether heparin is a normal constituent of the blood and the natural anticoagulant, but there seems little doubt that it is the factor responsible for the incoagulable state of the blood in anaphylaxis and peptone shock. Heparin was discovered in Howell's laboratory in 1916, but its anticoagulant properties could not be utilized outside the laboratory until the last five years, when non-toxic preparations became available as the result of the work of Professor Best and co-workers in Toronto and Jorpes and his school in Stockholm. Jorpes[2] describes heparin as a polysaccharide of high molecular weight which also contains nitrogen and sulphur. It appears to act by influencing the physical condition of the prothrombin, and it can easily be precipitated out with agents such as protamine or toluidin-blue, when the blood at once coagulates. The purest preparations of heparin contain up to 40 per cent. of sulphuric acid. The metachromatic violet staining of mucus and cartilage by toluidin-blue depends on the presence of mucoitin—or chondroitin—sulphuric acid, and the reaction is characteristic of high molecular esters of sulphuric acid. Heparin gives this reaction in extreme dilution, and an identical reaction is given by the metachromatic granules of the Ehrlich mast cells of the tissues. There is a parallelism between the content of the viscera in mast cells and the amount of sulphate split off by acid hydrolysis, and there is reason to believe that the mast cells are the site either of formation or of storage of heparin.

The pure heparin now available is eight to ten times as strong as previous preparations and yet is only the same price. It is non-toxic by injection, and 500 mg. can be injected intravenously into a rabbit without ill effect. It is stable, and with care solutions can be safely autoclaved, though it is easier to sterilize by filtration. Dosage at present is confused by differences in measurements of activity. One manufacturer defines the unit of heparin as " the activity of that quantity of material which will prevent the clotting of 1 c.cm. of cat's blood for twenty-four hours when kept in the cold." Another firm's unit " corresponds to that quantity of heparin which is necessary to maintain unclotted 1 c.cm. of recalcified citrated ox plasma, of a predetermined clotting power, for four hours at 37° C." Now Best has arbitrarily assumed that 1 mg. of his pure substance is equivalent to 100 units, though it is not yet certain that preparations are always of exactly the same purity or that we can dispense with biological assay. These different units apparently differ by about 500 per cent., and until international standards have been agreed upon users of heparin will be best advised to think in terms of milligrammes of pure preparations. Heparinized blood appears to be suitable for the majority of laboratory tests, with the exception of the Wassermann reaction, and, as Wilander points out,[3] the same blood specimen thus suffices for examinations for which otherwise separate samples of whole blood, serum, and oxalated plasma would have been needed. There is no risk of haemolysis and no change in the size or fragility of the red cells. The heparin is non-reducing and will not interfere with any chemical analysis commonly performed on blood. There is nevertheless evidence that the leucocytes and thrombocytes soon cohere and form floccules in heparinized blood, and white cell counts should therefore be made at once. With pure samples of heparin haematocrit values appear to be reliable, but more work must be done on the sedimentation test with heparinized blood, as some authors, including Ström,[4] have found the results capricious.

Heparin can be used in blood transfusion either by adding it to the blood as it is collected or by injecting it into the donor. In the latter method the donor receives an injection of 1 mg. of heparin per kilo of body weight, and the blood is withdrawn five to ten minutes later. At the end of one and a half to two hours the coagulation time of the donor returns to normal. Widström and Wilander[5]

[1] *British Medical Journal*, 1938, **1**, 1060.
[2] *Acta med. scand., Supplement.*, 1938, **89**, 139.
[3] *Acta med. scand.*, 1938, **94**, 258.
[4] Ibid., **96**, 365.
[5] Ibid., 1936, **88**, 434.

report that heparin has been injected into the pleural space to promote the resolution of experimental pleurisy in rabbits. The efforts of the Toronto school have turned largely to the study of methods for protracting the action of heparin and maintaining the diminished coagulability of the blood for prolonged periods, so as to avoid the risk of pulmonary embolism after operations and to prevent clotting in vascular surgery. With intravenous injections little is gained by increasing the initial dose above certain limits, but Murray and Best[6] have shown that the time of action can be prolonged almost indefinitely—for thirty or forty days if necessary—by continuous intravenous drip. In man this is given through an ordinary steel needle, which stays in the same spot for three to eight days. "General heparinization" is the term employed to denote that the clotting time of the blood in all parts of the body has been increased, and this has been effected by a continuous intravenous injection. The term "regional heparinization" has been coined to describe the injection of sufficient heparin into an artery proximal to a suture line to affect the clotting time locally in that vessel and in the blood returning from that region, but not to change the clotting time of the whole blood stream. Subcutaneously large doses of heparin are effective, and it was therefore natural to apply the same methods as have been successful in prolonging the action of insulin. A heparin–protamine complex proved unsuitable for injection, but benzidine–heparin shows a definite prolongation of action, and Jaques, Charles, and Best[7] have demonstrated that with large doses subcutaneously coagulation is diminished for thirty to forty hours. Although protamine itself has an anticoagulant action it neutralizes heparin by combining with it to form an insoluble salt. This reaction cannot be used *in vivo* owing to the toxicity of protamine, but it provides a method for titrating blood for the presence of heparin *in vitro*.

The introduction of heparin has enormously simplified certain important experimental techniques in animals, such as transplantation of organs and exchange transfusions. Its most obvious applications to the human "animal" appear to be in arterial and venous surgery and in the prevention of post-operative thrombosis and embolism. Murray and Best have shown that if regional heparinization is used arteries and veins which have been sectioned and then sutured remain patent in about 80 per cent. of cases. If the lumen can be kept patent for seventy-two hours the suture lines heal and there is no longer a tendency to thrombosis or clotting at the site. Embolectomy can now be carried out many hours after the lodgment of the clot, as heparinization will prevent clotting while the damaged intima is recovering. The prevention of post-operative thrombosis is more difficult to assess, but heparin has been used with complete success in Toronto in the after-treatment of fractured neck of the femur, prostatectomy, splenectomy, and other major abdominal operations in which thrombosis and embolism are peculiarly common. It is of course necessary, before beginning general heparinization, to wait four to twenty-four hours to allow the operation of the normal processes which control bleeding. Heparin is given at the rate of approximately 10 mg. per hour for seventy-two to 120 hours, and as 10 mg. of heparin can be obtained for one shilling one obstacle we previously referred to,[8] when we stated that "the only difficulty that will face would-be users is in obtaining good heparin at any but an almost prohibitive price," no longer exists. Professor Best declares his intention to push ahead with experimental studies in the hope that further clinical applications will manifest themselves, but in the field from which he has already gathered so rich a harvest a good deal remains to be gleaned, and clinical workers have much to occupy them in repeating in man the procedures Professor Best has carried out in animals, in discovering if heparin plays any part in morbid conditions of the blood, and in determining its sphere of usefulness in the clinical laboratory.

[6] *Ann. Surg.*, 1938, **108**, 162.
[7] *Acta med. scand., Supplement.*, 1938, **90**, 190.

CODEINE AS A HABIT-FORMING DRUG

It is common knowledge that international control of the traffic in opium alkaloids has been greatly complicated by the enterprise and skill of organic chemists. The conversion of morphine into heroin was the first important step in the synthetic production of drugs of addiction, and more recently at least three habit-forming drugs (dicodide, eucodal, and acedicone) have been produced from codeine. This difficulty was dealt with by supervising the wholesale trade in codeine, but since the latter drug was believed not to be habit-forming its retail trade was not regulated. This step resulted in a great increase in the popularity of codeine for use in such medicaments as cough tablets, and it is now estimated that the therapeutic use of codeine is about three times as large as that of morphine. The quantities of codeine required are obtained by preparing it synthetically from morphine. In the last few years disturbing evidence has been accumulating from various sources, and in particular from Canada, which indicates that codeine itself can be used as a drug of addiction, and that the remarkable increase that has occurred in the world production of codeine

[8] *British Medical Journal*, 1936, **2**, 547.

is partly due to this fact. A summary of the known facts about codeine addiction recently prepared by Dr. P. Wolff[1] is therefore of considerable interest.

At the Hague Conference in 1912 it was decided not to include codeine among the drugs of addiction. The experts (one of whom was Dr. Wolff) appointed by the League of Nations to prepare evidence for the Conference on the Limitation of the Manufacture of Narcotic Drugs in 1931 gave the opinion that codeine was practically harmless as regards the production of drug addiction. This opinion was supported by substantial evidence, for extensive investigations undertaken at various times in the United States had revealed few, if any, certain cases of codeine addiction. Thus Treadway in 1930 analysed carefully 1,660 cases of drug addiction and found only a single case of codeine addiction. The situation at that time was that although morphinists, when deprived of morphine, might use codeine as a substitute, yet primary addiction to codeine was extremely rare. Dr. Wolff indeed states in this present article that only seven cases are known of primary addiction to codeine taken by mouth. The situation has changed recently by the development of subcutaneous or intravenous administration of codeine. That something is wrong in regard to the consumption of codeine is indicated by the fact that the figure per million inhabitants is about ten times as great in Canada and in France as in Great Britain; moreover, the annual imports of codeine into Canada have increased about threefold in the last decade. Investigations in Canada have shown that morphinists use codeine injections as a substitute for morphine. Experiments on morphinists also showed that codeine injected parenterally alleviated the symptoms set up by withdrawal of morphine and that abstinence symptoms occurred as soon as the codeine was stopped. An even more serious fact is that primary addiction to codeine injections has been proved to occur. The Canadian Government is taking steps to control the retail sale of this drug, and the problem of the chances of the occurrence of codeine addiction is being investigated in several other countries.

Dr. Wolff concludes his article by pointing out that there is little likelihood of codeine, when taken by mouth in the usual therapeutic doses, leading to addiction. He suggests that codeine should be avoided as far as possible in the medical treatment of persons who have formerly been addicted to morphine or of persons who are constitutionally predisposed to drug addiction.

[1] "The Significance of Codeine as a Habit-forming Drug," by P. Wolff. *Bull. Hlth. Org. L.o.N.*, vol. vii, Extract No. 10.

INDUSTRIAL HEALTH RESEARCH

The eighteenth annual report of the Industrial Health Research Board[1] differs from its predecessors in that it not only contains the usual report of work done during the current year, but has also a summary of the main results achieved during the twenty years for which the Board has been in existence. An introduction to this summary traces briefly the gradual changes of outlook through which the Board has passed during these years. When the Health of Munition Workers Committee was formed in 1915 very little was known of the physiological laws governing industrial efficiency, and work proceeded in many cases under conditions as to hours, methods of work, and environment which were definitely detrimental both to the health of the operatives and to production. The committee gained so much valuable knowledge that it was decided that similar investigations ought to be maintained in post-war years, and accordingly the Industrial Fatigue Board was set up under the auspices of the Medical Research Council. At first the Board was mainly concerned with problems of fatigue arising from long hours of work, but later on this subject assumed less importance, and the special interest of the Board in problems of health was emphasized by substituting the word "health" for "fatigue" in its title. Moreover, the character of industry in general had changed considerably owing to the rapid advances of mechanization and the growth of light repetition work at the expense of heavier manual work. This put a premium on manual dexterity, and the "speeding-up" sometimes introduced was apt to react on the health of the workers, and especially on their spirits. The second part of the report, dealing with current research, describes a number of interesting investigations, only a few of which can be referred to here. Observations on the vision of a group of industrial workers showed that well over half had errors of refraction, three-fourths of which were uncorrected. It is important to ascertain if such proportions are characteristic of industry in general, and the Board therefore decided to extend the investigation to other groups of workers. The investigations now being made on heating and ventilation are mostly concerned with work at high temperatures, such as are met with in coal mines. It is interesting to note that in deep mines the effects of radiation may be substantial, the rock surfaces being sometimes 20° F. warmer than the air. The work on accident-proneness continues, with special reference to motor transport drivers, and it is claimed that the tests now used are to some extent predictive and should be of use in selecting new drivers. Studies of vocational aptitudes are being made in respect of temperament, vocational wishes, intelligence, and mechanical ability, both in adults and in juveniles of both sexes. Finally, occupational sickness is the subject of several investigations, the most important of which relates to a comprehensive inquiry into pulmonary disease in South Wales coal miners. It involves the investigation of cases of silicosis, the air-borne dust in the mines, and their atmospheric conditions.

[1] Medical Research Council, 1938. H.M. Stationery Office. Price 1s. net (postage extra).

POST-MORTEM CHANGES IN BONE MARROW

The examination of the bone marrow by means of sternal aspiration has not only increased our knowledge of many haematological conditions but has also made apparent fallacies in our conceptions of normal marrow cytology. It has long been recognized that the study of human marrow obtained post mortem was unsatisfactory, as changes took place which rendered the staining of the cells difficult, and although fixed sections are excellent for giving an impression of the distribution and degree of cellularity, it was impossible by this method to study the cytology of the cells with that clarity which can be achieved in film preparations. It would appear, however, that after death changes take place not merely in staining properties but also in the apparent proportions of the various cells. In normal marrow obtained in life some 40 per cent. of the cells are neutrophil leucocytes, whereas in post-mortem material the majority of the cells are "round cells," commonly regarded as myeloblasts. This discrepancy has been recognized for some ten years, and was generally explained as representing an agonal outpouring of leucocytes from the marrow. Rohr and Hafter,[1] working in Naegeli's clinic at Zurich, offer a different explanation. They have performed sternal punctures at repeated intervals before and after death in a number of cases of non-haematological conditions and find no striking changes in the neutrophil content of the marrow in the ante-mortem state; but after death changes take place very rapidly. In all cases examined the neutrophil percentage dropped from the normal 40 to between 1 and 3.5 in less than twenty-four hours. In two hours the nucleus began to swell and at the end of four hours had become rounded, so that it was difficult to differentiate them from myelocytes, and shortly afterwards lysis began; further vacuoles formed in the cytoplasm, the cell outlines became obscured, and at the end of ten hours they merged into syncytial masses in which granules and nuclear debris lay. Similar changes were seen in the myelocytes, though to a lesser degree, whereas the myeloblasts remained unaltered for much longer; in fact this autolysis was proportional to the proteolytic activity of the cells and proceeded more rapidly in cases of chronic disease than those with acute conditions. In contrast to the neutrophils, the eosinophils showed practically no change in their form or number up to twenty-four hours, though in later stages autolytic changes also appeared. The investigators found no significant change in the number of erythroblasts, and they could be easily recognized many hours after death. But there were considerable alterations in the character of the cells; these were of two kinds. First, there was a great increase of cells whose nuclei showed karyorrhexis, and this break-up of the nuclear material began in the ante-mortem agonal state and reached a maximum within a few hours of death; it is interpreted as a degenerative toxic change possibly associated with a terminal acidosis. In addition to this there was evidence of post-mortem maturation of the cytoplasm, the proportion of acidophil (haemoglobinated) erythroblasts steadily rising during the first six hours. Rohr and Hafter observed little significant change in the megakaryocytes, and although there was an apparent increase in the number of reticulum cells their impression is that this is not an absolute increase but that the autolysis of the granulocytes makes the normally inconspicuous reticular syncytium more obvious. The importance of this carefully controlled work for morbid histology cannot be overestimated; if it is confirmed—and general observations make this more than probable—it must minimize the value of all detailed histological investigations on the bone marrow after death, and differential cell counts of post-mortem marrow may be regarded as almost valueless.

[1] *Folia haemat.*, Lpz., 1937, **58**, 38.

ANGIOID STREAKS—ELASTOSIS DYSTROPHICA

There has been considerable controversy as to the aetiology of the changes in the fundus which Knapp, in 1892, termed angioid streaks. The fact that different stages of the affection assume rather dissimilar appearances—haemorrhages, exudates, or pigment changes dominating the picture at different times—has not helped to clarify the issue, for on theoretical grounds different observers have implicated different processes, stressing one or other ophthalmoscopic feature. Histological studies have not been particularly helpful because of the difficulty in obtaining satisfactory material. This difficulty has been such that most of the older studies can be dismissed as not valid, for the diagnosis has not been beyond criticism in any of them. Interest in angioid streaks was revived on the description by Ester Grönblad[1] in 1929 of an associated skin lesion, the rare pseudoxanthoma elasticum. This observation has now been confirmed in practically all the cases of angioid streaks studied since then. It is of interest to note that in 1903 Hallapeau and Laffite,[2] in describing a case of pseudoxanthoma elasticum, reported the presence of what they called central retino-choroiditis. Apart from the inherent interest in this association, Grönblad's observation was of importance in implicating the membrane of Bruch as the primary seat of the affection, for in the skin condition the underlying lesion is extensive degeneration of the elastic tissue. In an excellent contribution by Böck[3] histological confirmation of this supposition is advanced. Böck made a careful study of the eyes of a patient who showed the associated ocular and cutaneous conditions. Definite ruptures of the membrane of Bruch were clearly seen, and it is apparent that the appearance of angioid streaks must be due to these tears, while the various other phenomena seen in the fundus are secondary features. Further confirmation is found in the thesis by Prick[4] published simultaneously and independently. Of even greater significance is the fact that both these authors report the clinical finding of vascular hypertension, and the finding at necropsy of extensive degeneration of the elastic

[1] *Acta Ophthal.*, 1929, **7**, 329; ibid., Suppl., I, 1932.
[2] *Ann. Derm. Syph.*, Paris, 1903, **4**, 595.
[3] *Z. Augenheilk.*, 1938, **95**, 1.
[4] *Pontine pseudobulbaireparalyse bij pseudoxanthoma elasticum.* Thesis. Amsterdam, 1938.

system in the larger systemic arteries, so that there is every justification for extending the eye and skin syndrome to include elastic tissue degeneration in the vascular system. The name elastosis dystrophica suggested by Böck seems warranted. These recent observations explain the haemorrhages so often seen in the fundus in cases of angioid streaks. They explain, too, the occurrence of haemorrhages in other organs, as noted by Prick and also by Law.[5] Of particular interest is the presence in Prick's case of pseudo-bulbar palsy, the result of a cerebral arteriopathy—secondary to arterial elastic tissue degeneration. The possible relationship to diskiform degeneration of the macula is worthy of study, as Grönblad has pointed out, for the histological feature of this affection is a lesion of the elastic membrane of Bruch, and clinically appearances simulating those of diskiform degeneration are often seen in cases of angioid streaks. Interesting, too, is the fact that both angioid streaks and pseudoxanthoma elasticum have been known to be familial in character—a point particularly stressed since the association of the two conditions has been recognized.

MORTALITY IN BELGIUM

In these days no sensible person uses the word "race" if he can help it—unless he is interested in the turf. A statistician familiar with the great names in the history of statistical methods, recalling the fact that among the very greatest are de Moivre, Laplace, and Quetelet, two Frenchmen and a Belgian, and noting that French vital statistics are conspicuously inferior to those of England and Belgian to Dutch vital statistics, might be tempted to think that race, or culture, had something to do with the difference, as perhaps it has. But in Belgium the medical statistical organization has been recently improved, and the statistician of the Ministry of Public Health in his lucid account of mortality rates in Belgium[6] is able to give much information. He follows the general lines of such reports as the text volume of our Registrar-General's annual review, but includes more detailed tables (such as appear in the tabular volume of our statistics). M. Selleslags has throughout made direct comparisons between Belgium and Holland, which are almost always favourable, and often very favourable, to Holland. Standardized to the age and sex distribution of Belgium the Netherlands rate of mortality in 1930 would have been 10.8 per 1,000; the Belgian rate was 13.3. As M. Selleslags puts it, Belgium pays an annual tribute of more than twenty thousand human lives. Here and elsewhere the implicit assumption is that the differences between the rates of mortality depend upon controllable factors, an assumption which is pragmatically valuable because improvement of public health and sanitary services must always do good. But we hope that this purely statistical study may be followed by an economic and sociological comparison of these neighbouring States, which can be made much more competently by a Dutch or Belgian man of science than by a foreigner. We should suppose that the economic structures, principal industries, systems of education, etc., differ widely, and that these are very relevant factors. In an appendix the author gives a number of valuable tables. One of these would provide a good theme for a sermon on the vanity of human wishes. If one omits mortality caused by automobiles —that is, retains industrial accidents, accidental drownings, poisonings, etc.—the rates per 100,000 males in 1901–10 and 1933–6 were respectively 47.1 and 33.2, a great improvement. But in 1901–10 there was, statistically speaking, no mortality through motor-cars, and in 1933–6 the rate was 14.6. So the total mortality from accidents in 1933–6 was 47.8 per 100,000, a little greater than in 1901–10.

[5] *Trans. ophth. Soc. U. Kingdom*, 1938, **581**. 191.

[6] *La Mortalité en Belgique*. By Willy Selleslags. Preface by René Sand. Brussels: *Archives de Médecine Sociale et d'Hygiène et Revue de Pathologie et de Physiologie du Travail*. (25 fr.)

EXPERIMENTAL DROWNING

F. G. Banting and his associates at the Banting Institute have recently turned their attention to another method of saving the life of the drowned, as a result of their own observations[1] on the physiological factors involved. They describe two types of drowning: in one a period of apnoea and swallowing is followed by gasping and the entrance of water into the lungs, whereas in the other the gasping phase is never reached and death occurs with the entrance of very little if any water into the lungs, obstruction by spasm of the glottis being the predominant feature. Such spasm may be set up by the entrance of small amounts of water into the upper respiratory tract, and the asphyxia produced is severe and prolonged, associated with a gradual slowing in the pulse rate. Measures to overcome the laryngeal spasm—such as the introduction of amyl nitrite, the use of a tracheal catheter for insufflation with 20 per cent. CO_2 in oxygen, and atropine to neutralize the vagal effect on the pulse rate—all led to improved recovery rates in the experimentally drowned animals. Artificial respiration was maintained during these and other methods of resuscitation, and it is emphasized that in dealing with human cases it must be persisted in longer than may be usual and even "until rigor mortis sets in." The electrocardiograph shows that the cardiac complexes can be detected as long as twenty-five minutes after the heart sounds are inaudible through the stethoscope. A summary of the measures recommended runs as follows: "As soon as the patient is recovered from the water he should be held up so that water may drain from the stomach and lungs and then placed in the prone position. All foreign matter should be removed from the mouth and larynx, —false teeth, weeds, etc.—and the tongue pulled forward with a handkerchief or tongue forceps, and the Schafer method of artificial respiration immediately started. It is of vital importance that there should be a free passage of air in and out of the chest. Therefore, if this cannot be detected the larynx should be swabbed with 10 per cent. cocaine or a catheter passed into the trachea with the aid of a laryngoscope, if available, or even by the direct vision method. If artificial respiration is performed without an adequate air passage

[1] *Canad. med. Ass. J.*, 1938, **39**, 226.

the pressure will cause rupture of alveoli, adding to the already heavy odds against the patient. If a tracheal catheter has been inserted initial suction of this tube will remove much of the foam filling the trachea and bronchi." Carbon dioxide (20 per cent.) in oxygen can be insufflated at the rate of 3 litres a minute, and in the type of drowning with little aspiration of fluid amyl nitrite blown down the tracheal catheter is regarded as "the most effective measure yet found." The injection of 40 minims of 1 in 1,000 adrenaline solution to assist the heart's action is also recommended, and atropine 1/30 to 1/25 grain should be given intravenously. These measures are applicable to all asphyxiated or electrically shocked patients with the additional modifications suggested for those who have been drowned. Once again it must be emphasized that, valuable as these additional methods may be, the most important in all three groups is "prompt, adequate, and prolonged artificial respiration."

THE SHWARTZMAN PHENOMENON

If a bacterial filtrate which on injection into the skin of a rabbit produces little reaction is also injected intravenously on the following day necrosis and haemorrhage occur at the site of the previous skin injection. This phenomenon was first observed by Dr. Gregory Shwartzman of New York in 1927, and since then has been exhaustively studied by himself and by many other investigators. In an important and useful work,[1] Shwartzman unifies much information hitherto only available in scattered form on a subject which has the merits of comparative novelty, undoubted mystery, and some promise of illuminating certain obscure problems of disease. The earlier chapters are a systematic exposition of the conditions under which the phenomenon is produced. The active principle concerned is of unknown nature, but its properties have been extensively studied; not all bacteria produce it, but, on the other hand, some substances other than bacteria will elicit the reaction in areas previously injected with bacterial filtrates. Perhaps the most striking difference between this phenomenon and others, such as that of anaphylaxis, connected with the effects of injecting foreign material parenterally is its utter lack of specificity in the sense that the two injections may consist of filtrates of quite unrelated bacteria. An extraordinary and quite distinct aspect of the subject is the occurrence of a similar reaction, sometimes leading to regression, in malignant tumours when a highly active bacterial filtrate is given intravenously; the possible bearing of this on treatment with Coley's fluid is obvious. The least convincing chapter is that in which the author strives to interpret some of the phenomena of naturally occurring disease in terms of this phenomenon. The suggestion that skin necroses in the sacral region in enteric fever, or certain haemorrhagic states, can be explained on these lines seems highly speculative. It has been shown that an antibody which specifically neutralizes a corresponding bacterial filtrate is produced during recovery from certain infections in man, and titrations of therapeutic serum have been carried out on this basis with results differing from those obtained by estimating other kinds of antibody; there is some evidence that anti-meningococcal and anti-typhoid sera with a high capacity for inhibiting the phenomenon are correspondingly effective therapeutically. In spite of facts such as these, the bearing of which is after all only indirect, it does not appear that the Shwartzman phenomenon has yet been conclusively shown to have any exact counterpart in human pathology, and the fact that only the rabbit, of all animals so far tested, exhibits it typically and regularly seems an obstacle to drawing conclusions with a general application. In the bewilderment which the reader may pardonably feel over a subject so full of uncertainties he is unfortunately impeded further by the author's style, which is careless and obscure.

[1] *Phenomenon of Local Tissue Reactivity and its Immunological, Pathological and Clinical Significance.* By Gregory Shwartzman, M.D. Foreword by Jules Bordet, M.D. Humphrey Milford, Oxford University Press. 34s.

IN MEMORY OF OSLER

The fourth Osler Memorial Oration was delivered by Sir Humphry Rolleston at the sixty-ninth annual meeting of the Canadian Medical Association, held at Halifax on June 22, 1938. It was published in the *Journal of the Canadian Medical Association* (1938, **39**, 313). The oration is of especial interest because it is written by one who knew William Osler well and deals with the latter portion of his life, which was spent as Regius Professor of Medicine at Oxford. Sir Humphry tells much about Osler, of his personality, of his charm of manner, of his humble-mindedness, of his desire to help, of his manifold interests, of his power of work, and of his resuscitation of a medical school which had almost become extinct. The oration is well worth the trouble it must have taken to produce, and recalls to many the traits of a great teacher of medicine.

Dr. H. Morley Fletcher left this country on October 28 for Australia, where he is going as representative of the Royal College of Physicians of London to the opening of the Royal Australasian College of Physicians in Sydney. The Royal College of Physicians has presented an illuminated address and a replica of the silver wand or caduceus which was presented to the College by John Caius in 1556.

The next session of the General Medical Council will open on Tuesday, November 22, at 2 o'clock, when the President, Sir Norman Walker, M.D., will take the chair and deliver an address. The Council will sit thereafter from day to day until its business is concluded.

Professor J. B. S. Haldane, F.R.S., will deliver the Lloyd Roberts Lecture on "Some Problems of Human Congenital Disease" at the Royal College of Physicians of London, Pall Mall East, S.W., on Thursday, November 17, at 5 p.m.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

CHRONIC MASTITIS

BY

CECIL ROWNTREE, F.R.C.S.

The condition generally known as mastitis, chronic interstitial mastitis, or cystic mastitis—to mention the most common names by which it is recognized—would be a relatively insignificant and unimportant disease were it not for the fact that in some of its manifestations it so closely mimics cancer of the breast, and that, furthermore, there is a widespread belief that it may be the forerunner of a malignant change in the affected organ.

Whatever its type and whatever its origin mastitis is almost invariably painful—not the severe throbbing pain associated with pyogenic infections of the breast, but a minor though none the less steady, nagging, neuralgic pain aggravated by movement or exercise, and influenced to some extent by the menstrual cycle. It is the pain that brings these patients to the doctor and not the accidental discovery of a painless lump, as is so often the case in cancer of the breast.

Mastitis is so varied in its manifestations, and the different types merge so gradually one into another, that it is very difficult to provide any satisfactory classification ; but careful consideration of a large number of cases does permit some sort of selection of comprehensive clinical groups.

Subacute Mastitis

The best-defined group consists of cases of what should properly be described as subacute mastitis, characterized by painful swelling of a sector of the breast. The affected sector becomes tender, hard, and heavy, and acquires a cake-like rigidity, so that on manipulation it moves as one piece on the chest wall. A large part—as much as half—of the breast may be affected in these cases. This particular type of mastitis is generally unilateral ; it is apparently more common on the right side than on the left, and is met with especially in women whose breasts are somewhat pendulous and who have recently engaged in some unaccustomed effort such as the first game of tennis of the season, spring-cleaning or similar strenuous exercise. In fact, it is pretty obvious that trauma is the determining cause in most of these cases ; but trauma cannot be the whole story, for it is significant that the kind of mastitis met with in the tiny breasts of little girls just before puberty, and in boys too, closely resembles the type just described.

Pubescent Mastitis

These puberty cases provide an interesting and typical clinical picture, for here also the breast tissue becomes firm, tender, and rigid ; but there is this difference—that the whole breast, such as it is, is involved, with the result that a little tumour is produced in the form of a flat disk with rounded edges and a thinner centre which closely resembles the shape of a nux vomica bean. It is characteristic of these cases that both sides tend to become affected, the second breast enlarging as the first gets better.

Mastitis in the Male

This bilateral involvement at puberty gives strong support to the suggestion of hormone imbalance as an aetiological factor in the disease, and stands in sharp contrast to the state of affairs in the adult male, where mastitis would appear to be almost invariably unilateral and almost invariably the result of trauma. Here also the clinical signs are striking and definite, for again the whole breast is involved, with the production of the bean-shaped mass already referred to. The shape of the swelling affords a useful diagnostic distinction from cancer of the male breast, which at any rate begins as an asymmetrical tumour of only a portion of the breast tissue.

Treatment of Subacute Mastitis

Subacute mastitis occurring in any of these forms tends to get well in a few weeks, but its progress may be aided by local applications of heat and belladonna and by firm support and pressure by brassière, bandage, or elastoplast. Protection from further direct trauma and limitation of use of the arm on the affected side are obvious adjuvants that should not be omitted. In cases where the breasts are large or pendulous it is important to insist upon a well-fitting brassière if recurrence of the trouble is to be avoided, and it is well to remember that these patients may be greatly helped by wearing a brassière in bed as well as on all occasions in the daytime.

These subacute cases are relatively uncommon types of mastitis that are comparatively easy to diagnose and to deal with, and they afford a striking contrast to the more common and the more difficult problems presented by the chronic cases.

Chronic Interstitial Mastitis

What are the predominating symptoms in this group? Unlike the adult subacute variety, chronic mastitis is often bilateral—a very important point when it is remembered that cancer is almost always unilateral ; and more than one area of the breast may be affected—again a matter of importance when compared with cancer, which almost invariably starts as a single focus. The age distribution is fairly wide, for it is commonly met with from the early thirties until well after the menopause. It is not, however, seen in old age, and it is a fairly safe rule that after 65 or 70 most lesions of the breast are malignant.

Breasts which are the seat of chronic mastitis are in the main soft and pendulous, and it is the exception to find the disease in firm, well-preserved, and shapely organs. I have the impression that cancer shows no such discrimination. Enlargement of the axillary lymph glands is sometimes seen, but they are of the normal soft consistency, unlike the inelastic hardness resulting from cancerous infiltration.

Discharge from the nipple is not infrequent, and occasionally a small amount of yellow or greenish fluid may be expressed from both nipples although only one breast has given rise to discomfort.

Pathological Anatomy of Chronic Mastitis

For a clear comprehension of the problems occasioned by mastitis, a mental picture of what is going on or what may be going on in the affected breast is essential. This is, of course, not the place for a lengthy consideration of the pathological anatomy of chronic mastitis, but very broadly it may be stated that it is characterized by the formation of an excess of interstitial fibrous tissue and a tendency to cyst formation in the affected portions of the breast. At one end of the scale we see cases in which the development of fibrous tissue may entirely overshadow the cyst formation: the cysts are there but are few in number and microscopic in size, and the affected breast tissue is then a smooth homogeneous mass. At the other end of the scale are cases in which cyst formation predominates, and the clinical picture will merely present one or more simple cysts of any size between a pea and a golf ball.

Most common are cases in which fibrous tissue and cysts are more or less balanced, and the picture will be an irregular, shotty, and occasionally very hard mass which is made up of innumerable tiny cysts embedded in dense fibrous tissue. It is clear, too, that it is possible for this process of cyst–fibrous tissue formation to be present in more than one portion of the affected breast and to be at a different stage in each.

This thumbnail sketch of the pathological processes underlying chronic mastitis will serve to indicate how varied may be the clinical manifestations of the disease, and how difficult may be the task of the practitioner who is faced with the responsibility of deciding whether in fact it really is a case of chronic mastitis with which he has to deal, or whether it is something more serious. And a decision must be made at once, for it cannot or should not be deferred in order to await the effects of a period of tentative treatment.

Diagnosis of Chronic Mastitis

The finely nodular or shotty cases are generally easy of diagnosis: the patch tends to be sector-shaped, it is tender on manipulation, there may be more than one patch in the breast, and both breasts may be affected. The cystic cases, too, are often easily recognized; but there are wide variations, and whereas the true nature of a large, simple thin-walled cyst may be at once detected by its spherical shape, by its elasticity, and by the fact that the posterior hemisphere of the cyst may sometimes be felt bulging through the deep aspect of the breast, it is quite otherwise with solitary cysts firmly embedded in a thick mass of tissue in cases of fibrous mastitis. It may be impossible to distinguish these from carcinoma until after removal.

When fibrous tissue is predominant a hard mass develops which merges imperceptibly into the surrounding breast tissue, and gives, when grasped between the fingers and thumb, the impression of a definite tumour, but when palpated with the flat of the hand may not be apparent as a tumour at all. Great stress has been laid upon this last sign, but it is unsafe to attach too much weight to it, as certain cancers of the breast starting on the deep surface of the organ may present the same elusive characters.

It is when a nodule is of quite small size in cases of fibrous mastitis that the greatest difficulties in diagnosis are met with; indeed, there is no ordinary method of examination by which a very small cancer, a very small cyst, and a very small mass of fibrous mastitis can be differentiated: and owing to the influence of widespread propaganda we are getting more and more of these early cases. Puncture with a fine hypodermic needle may demonstrate the fluid contents of a cyst; but the tiny ones are not easy to hit off in this way, and in doubtful cases our only resort is diagnostic removal of the suspicious mass followed if doubt still exists by histological examination.

Biopsy of Doubtful Breast Tumours

There are wide differences of opinion as to the wisdom of this procedure; indeed, many go so far as to lay down the rule that all suspicious breasts should forthwith be removed. This is surgery on totalitarian lines, and puts at a discount the long years of careful training with which most surgeons endeavour to prepare themselves. There is no convincing evidence which clearly indicates that there is danger in establishing the diagnosis by careful preliminary excision. It will be generally agreed that the patient should be spared if possible the ordeal of two visits to the operating table, and it is clear, therefore, that the diagnostic excision of breast tumours is best confined to those who have the knowledge necessary to enable them to recognize immediately the nature of the tissue removed, and the capacity to proceed with suitable operative treatment should the case prove to be malignant.

I recognize that this is a counsel of perfection and that those without much surgical experience must from time to time be faced with the necessity for removing one of these small masses for subsequent pathological examination. It is not always easy, particularly in large fat breasts; and a little practical point that I have found to be of great value is to fix the small tumour with a fine needle thrust into it through the skin before the incision is made. It is not easy then to lose one's way and to spend a long time searching for a little mass which can be strangely elusive in the surrounding fat.

In case the condition should prove to be malignant the gentlest possible handling is essential in order to avoid the possibility of squeezing cells into the neighbouring lymph or blood channels. Damage to the tissues also militates against that perfect healing of the wound which is so important if the preliminary excision is to be followed by a major operation at a later date. The most meticulous precautions should be taken to avoid infection of the wound, and it is well to adopt the additional safeguard of drainage in order to minimize the possibility of haematoma formation.

Treatment of Chronic Mastitis

To turn now to the treatment of chronic mastitis. It is obvious that in many cases it is necessarily surgical, because doubt as to the diagnosis imposes the necessity of removing the offending mass and thereby curing the disease or, at any rate, curing the symptoms and relieving the mind of both doctor and patient. While it is wise not to be niggardly in removing the portion that is under suspicion, there is no need at all in most cases for resection of wide areas of the breast.

Aspiration of Simple Cysts

In dealing with cases characterized by cyst formation it is always possible by aspiration through a stout hypodermic needle to empty individual cysts with a fair assurance that if the cyst be completely emptied it will not refill. Why, I do not know, but the fact is indis-

putable. But other cysts may develop, and although it may be possible to keep up with them by this procedure, the patient may become so distressed by the recurrent necessity for aspiration that it may be desirable to advise a limited amputation of the breast. If desired, this can be performed subcutaneously through a circumferential incision, leaving the nipple *in situ*; but I am bound to confess that the resulting area of depressed scar with the nipple perched somewhat precariously in the middle is to my mind more unsightly than the deformity left by a simple amputation with elliptical incisions which come neatly together in a linear scar. Complete symmetry is necessarily often obtained owing to the fact that multiple cystic disease of the breast tends to be bilateral and both sides may require amputation.

I am aware that I embark on somewhat controversial ground in advising the aspiration of simple cysts of the breast, but I have done it now so many times and for so many years with complete immunity from any kind of difficulty that I am convinced it affords a simple, safe, and effective method of dealing with them. There are two safeguards, however, that must be emphasized: first, the cyst must be completely emptied so that it collapses and entirely disappears, for if only half emptied it will return in a few weeks; moreover, if it is not possible to obtain complete collapse of a cyst by this means it indicates that there is something more than a simple cyst, and surgical exploration must be employed. The second safeguard is a most careful scrutiny of the fluid withdrawn. It may look like clear serum, it may be yellowish, or it may be green and turbid. None of these variations is of any significance, but if the fluid is blood-stained, then it means, or it may mean, an intracystic growth, and immediate surgical excision is indicated. In my experience this occurrence has been exceedingly rare.

One naturally asks oneself whether any treatment is possible that will stay the progress of multiple cyst formation, and I know of none when the cysts have achieved what one may term "clinical dimensions." But it is otherwise with cases of chronic mastitis where the cyst aspect is not clinically obvious; for there are two lines of attack which appear to hold out some hope of arresting what is, after all, a progressive disease. The first is the application of *x*-ray therapy, which does seem to be of value: it certainly diminishes pain, I think it softens the thickened tender masses, and I believe that it stays the progress of the disease. The second line of attack is based upon what would appear to be a well-founded view that all forms of chronic mastitis are to some extent dependent on hormone disturbance. The administration of hormone preparations such as theelol cannot at present be regarded as anything more than experimental, but it is obviously worthy of the detailed and extended trials that will be necessary before it is possible to come to any definite conclusion on the efficiency of the method in staying the progress of the disease.

Finally it should be emphasized that chronic mastitis is a relatively uncommon disease; or perhaps it would be more accurate to say that women present themselves for the treatment of chronic mastitis relatively seldom. It is less than half as common as cancer of the breast. Of any hundred women who come for treatment of chronic breast conditions sixty have cancer, ten such miscellaneous diseases as adenoma, lipoma, fat necrosis, and so on, and the remaining thirty have one or other of the manifestations of mastitis. It is a safe and wise rule, therefore, to regard any breast tumour as a carcinoma unless or until it has been proved by aspiration or biopsy to be innocent.

THE STATE OF THE PUBLIC HEALTH

CHIEF MEDICAL OFFICER'S REPORT*

[SECOND NOTICE]

A summary of the earlier chapters of Sir Arthur MacNalty's Annual Report for 1937 as Chief Medical Officer of the Ministry of Health appeared last week at page 957.

Medical Intelligence and Research

A list is given of over fifty committees on public health and medical questions on which members of the Ministry's staff have served. Fourteen reports and memoranda of special medical interest have been issued during the year. Attention is also drawn to certain expansions in the work of the Medical Intelligence Section. The chief of these relates to the recently established liaison between the Ministry and the Central Council for Health Education, a body which was founded in 1927 to co-ordinate the work of health publicity, etc.

Research in medical statistics has revealed, among other things, that simple violence killed more than half as many males as all the infectious diseases taken together, that a very large proportion of these violent deaths occurred on the roads, and that just as there are accident-prone persons so there are sickness-prone persons—that is, persons for whose abnormal sickness rate no merely physical grounds can be assigned and malingering can be excluded. Other matters dealt with in this chapter range from an account of rat destruction on ships, docks, quays, etc., and rat-flea surveys at ports to the problems dealt with by the International Sanitary Convention for Aerial Navigation. Full particulars are also given of port health administration during the year and of international health work.

Tuberculosis in 1937

Though there was a slight increase in the number of deaths from all forms of tuberculosis the standardized death rate for 1937 remains the same as for 1936, when the figure of 657 per million was the lowest ever recorded. It is the most striking example known of reduction of the mortality of a disease in our own time.

There were 28,529 deaths from tuberculosis certified in 1937—261 more than in 1936. The slight rise in mortality from pulmonary tuberculosis was directly associated with the epidemic of influenza at the beginning of the year. There was also some increase in the mortality from non-respiratory forms of tuberculosis. During the year 59,918 new cases of tuberculosis (all forms) came to light in England and Wales as compared with 59,269 in 1936. The number of new cases and contacts examined for the first time by tuberculosis officers in England and Wales was 161,382, an increase of 6,158 over 1936 and 12,444 over 1935. These figures probably indicate that greater use is being made of the service for suspected cases. It is hoped that the intensive educational campaign carried out under the auspices of the Ministry early in 1938 will result in patients seeking advice at an early stage of the disease when recovery is most probable. The chapter ends with a brief note on the surgical treatment of pulmonary tuberculosis and a discussion of bovine infection.

Venereal Diseases

There is evidence that measures taken under the Venereal Diseases Regulation are lowering the incidence of fresh infections with syphilis in this country. Cases of congenital syphilis among infants show a further reduction, and deaths from such late effects of syphilis as general paralysis of the insane and locomotor ataxia show,

* *On the State of the Public Health.* Annual Report of the Chief Medical Officer of the Ministry of Health for 1937. H.M. Stationery Office. 3s. 6d.

CHARLES H. BEST: HEPARIN AND THROMBOSIS

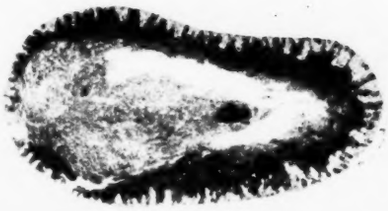


FIG. A.—White thrombi forming inside a cellophane tube

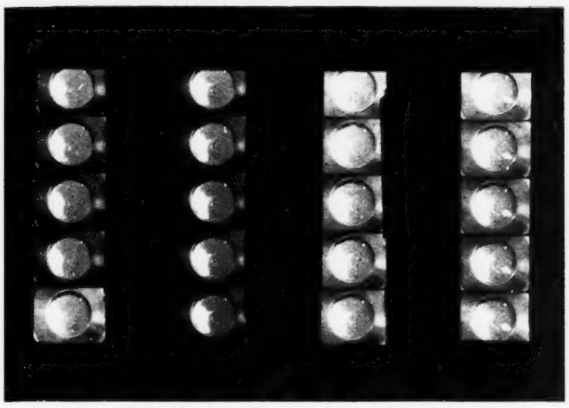
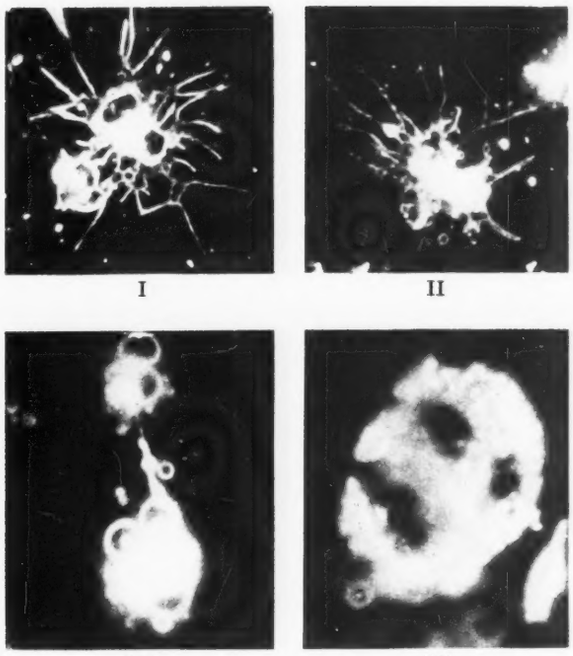


FIG. B.—Illustrating growth of white thrombi downstream, from above downwards and from left to right. (From Best, Cowan, and MacLean.)



I II III IV

FIG. C.—i and ii: Single platelets, showing digitations. iii: The clumping of central refractile areas of platelets. iv: Polymorphonuclear leucocyte. (From Best, Cowan, and MacLean.)

A. EISDELL MOORE: TREATMENT OF DELAYED UNION OF CARPAL SCAPHOID

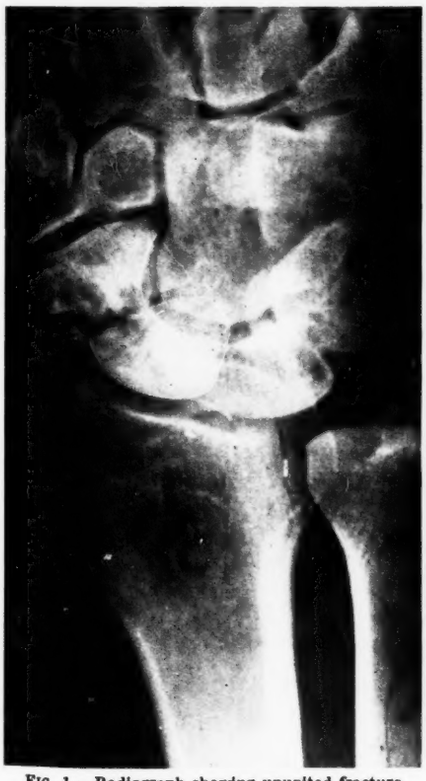


FIG. 1.—Radiograph showing ununited fracture of right scaphoid, with some vacuoles.

FIG. 2.—Application of leather-covered aluminium "cock-up" splint; dorsiflexed part fitted into centre of palm; arm portion held on flexor surface of forearm by leather casing.

FIG. 3.—Radiograph taken at the end of six months, showing apparent union.

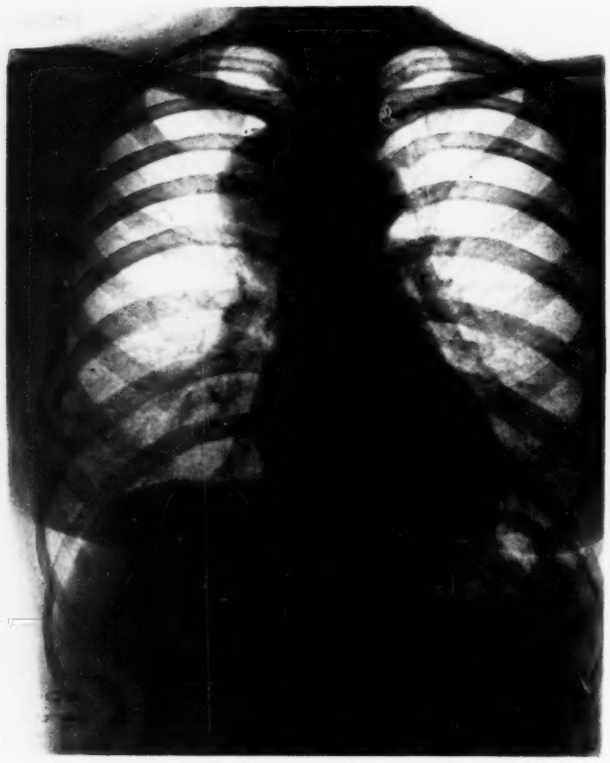


FIG. 1.—Case III. Radiograph showing a mediastinal teratoma in a woman aged 30.

FIG. 2.—Case III. The mediastinal teratoma as seen through the thoracoscope.

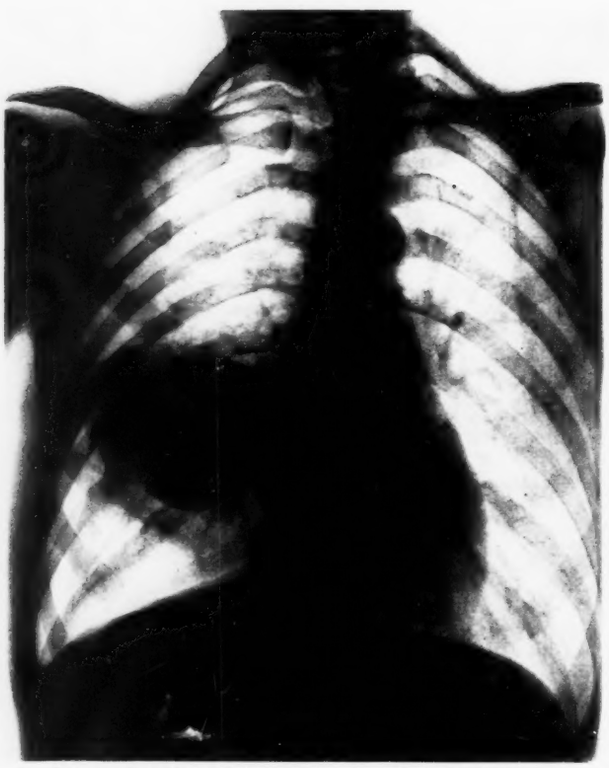


FIG. 3.—Case IV. Radiograph showing a single spherical mass in the right lower lung field in a man aged 33.

FIG. 4.—Case IV. Lateral radiograph. Biopsy after thoracoscopy showed this tumour to be a mixed-cell sarcoma.

J. W. D. BULL: CONGENITAL ATRESIA OF THE OESOPHAGUS

FIG. 1.—Radiograph taken in life.

FIG. 2.—Radiograph taken after death, showing lipiodol injected into the trachea filling the oesophagus and outlining the bronchial tree.

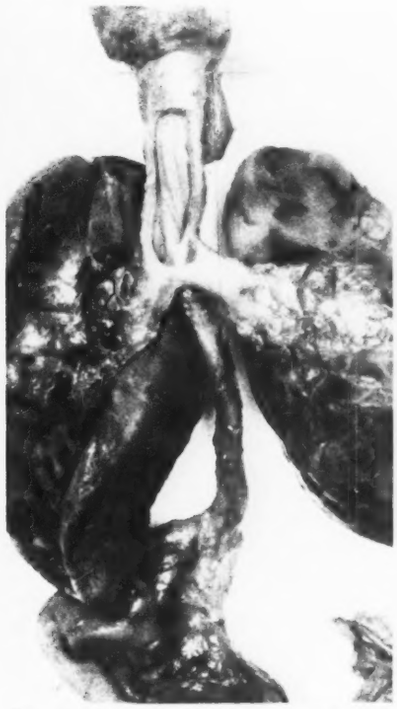


FIG. 3.—Specimen showing the congenital atresia of the oesophagus and the tracheo-oesophageal fistula.

J. ST. GEORGE WILSON: DIAGNOSIS OF LARGE OVARIAN CYSTS

FIG. 1.—Uterus and tubes normal.

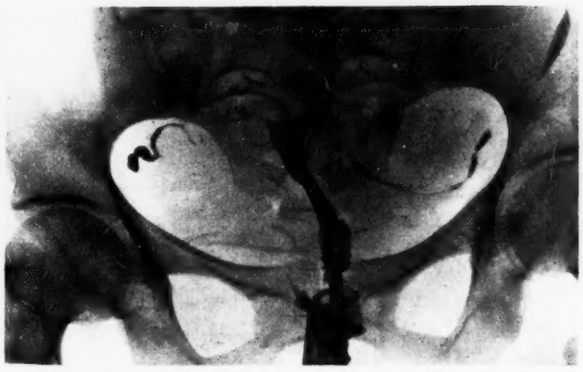


FIG. 2.—One tube considerably elongated compared with the other.

HENRY POSTON: BILATERAL DIGITAL EPIPHYSEAL DEFORMITY

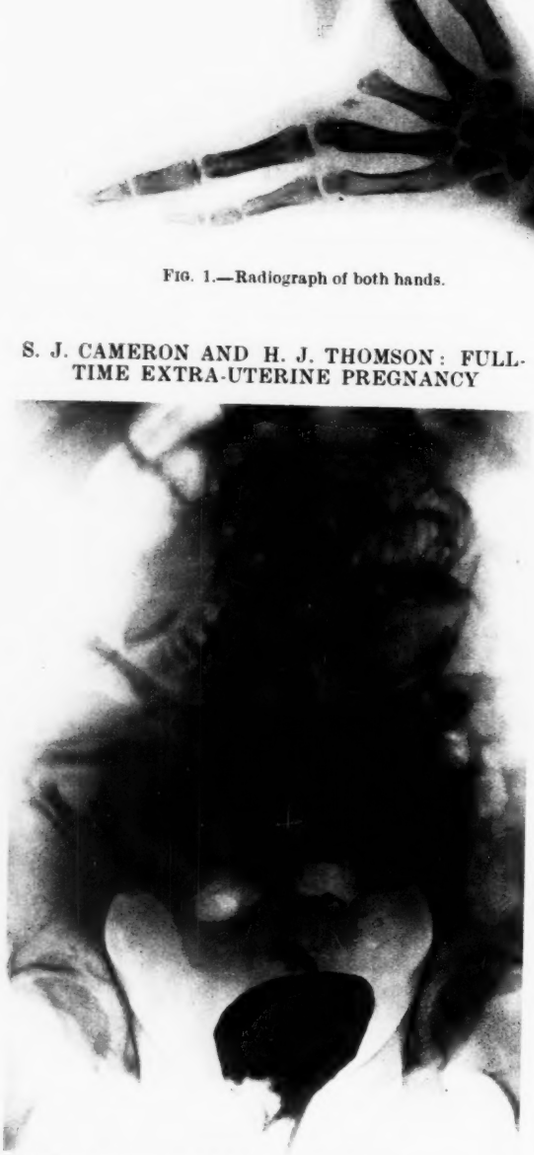
Note the medial subluxation of the middle phalanx of each index finger and the peculiar angulation of the epiphyses.

E. N. CALLUM: CONGENITAL DEFORMITIES OF HANDS AND FEET

FIG. 1.—Radiograph of both hands.

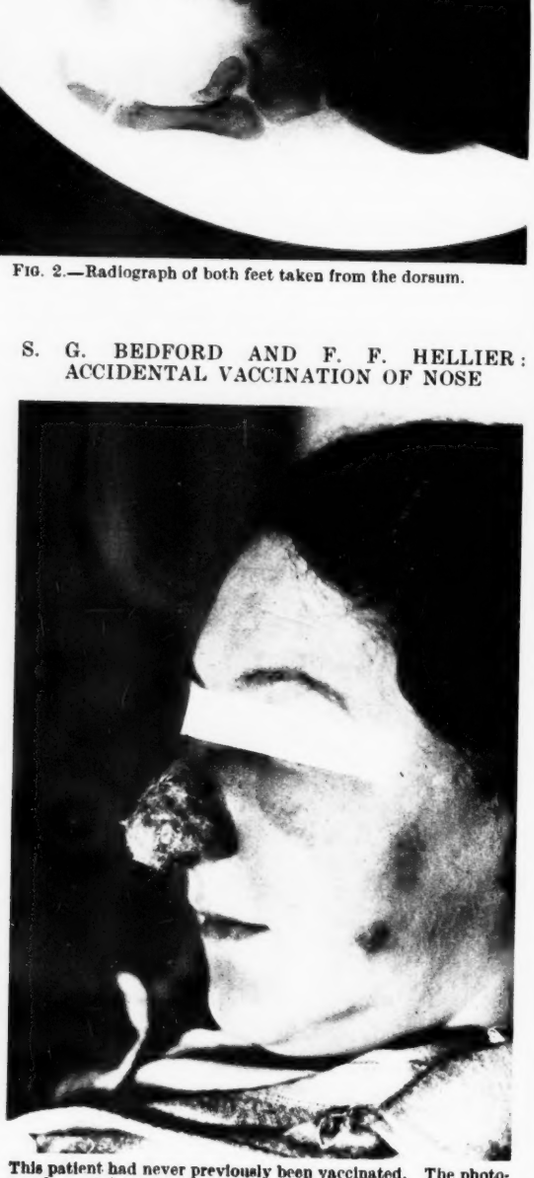
FIG. 2.—Radiograph of both feet taken from the dorsum.

S. J. CAMERON AND H. J. THOMSON: FULL-TIME EXTRA-UTERINE PREGNANCY



Radiograph showing lipiodol in the enlarged uterus and the left Fallopian tube, with the full-term foetus lying transversely in the unruptured right Fallopian tube.

S. G. BEDFORD AND F. F. HELLIER: ACCIDENTAL VACCINATION OF NOSE



This patient had never previously been vaccinated. The photograph was taken after most of the oedema had disappeared.

in males, a further fall though there is not much change as regards females. The figures for gonorrhoea show a slight increase over those for 1936, but this may be due to a larger proportion of infected persons resorting to treatment centres. An account is given of the new and promising method of treating gonorrhoea by the sulphonamide group of compounds, and a necessary warning is given against their use except under medical advice.

The Cancer Problem

There is still no indication of any decline in cancer mortality, and the year 1937 once more shows increases over the preceding year, both for males and females, though those increases are less than those manifested last year. The total number of deaths was 66,991 for both sexes compared with 66,354 in 1936, an increase of 637; the previous year's increase on its predecessor was 1,847. These mounting figures do not necessarily mean that the causes of the disease are becoming more prevalent year by year. Account has to be taken of the increasing longevity of the population whereby more people survive into ages in which the liability to cancer is greater, and of the increasing accuracy of diagnosis. It is pointed out that, until the wide-flung researches into causation bear more abundant fruit, our chief methods of attack are by early and accurate diagnosis and efficient treatment. Here, partly owing to advances in diagnosis, but more especially owing to the newer and more effective means of treatment, the outlook is now brighter than ever before. Apart from the progress of surgery, an increasing knowledge of the technique of treatment by radium and *x* rays has contributed to this result. The section closes with a discussion of the most promising lines of advance, and suggestions are made whereby the modern methods of diagnosis and treatment might be brought within the reach of a larger section of the population. It is essential that the provision of additional facilities be made known to both medical practitioners and the public, and people should be encouraged to seek advice and treatment at an earlier stage than is now often the case. Fortunately, there are signs that the provision of treatment in the radium centres has led to a greater demand for it.

Relation of Food to Health and Disease

Much work was done during the year on the subject of nutrition. The work of the Advisory Committee on Nutrition has been mainly concerned with an inquiry into family budgets, which is being conducted by the Ministry of Labour, the relation between income distribution and family expenditure on food, and quantitative dietary surveys. The League of Nations has published its final report on "The Relation of Nutrition to Health, Agriculture, and Economic Policy." Reference is made to certain surveys and investigations—namely, the dietary survey of the West Riding of Yorkshire, the ante-natal investigations in Blackburn and elsewhere, the collection of data in respect of measurements and clinical assessments relating to physical efficiency, and the rate of growth of babies. The Milk Nutrition Committee, whose first report was published early in 1937, issued a second (interim) report on the research done in schools in England and Scotland. Among other points brought out in this report is the fact that no constant differences were observed between the rates of growth of children receiving raw milk and those receiving pasteurized milk.

Suspected food poisoning outbreaks which came to the notice of the Medical Department of the Ministry numbered ninety-four, as compared with eighty-two in 1936 and 137 in 1935. On the subject of Salmonella infections it is pointed out that in many of the outbreaks the source of infection was not discovered. Suggestions are made as to how the work of investigation can be materially helped by those concerned in dealing with suspected cases of food poisoning. In connexion with the purity of food, reference is made to contamination of food by fluorine and other substances, and advice is given on the home canning of vegetables. A note on the use of refrigerators points out that while these have many advantages danger may result from ignorance of their limitations: "refrigerators are not sterilizers," and the food must in the first place be sound, whether intended to be stored in a refrigerator or elsewhere.

Conclusion

In his final chapter Sir Arthur MacNalty draws together the various threads, and reviewing the vital statistics for 1937 states: "The vital statistician must consider long-range periods, and it does not disturb him if one year's mortality figures show a slight rise over the previous year, provided that the figures over a decade show reduction." This year a new function has been added to the Department, in that to the Ministry of Health has been assigned the responsibility for dealing with matters relating to the provision of hospital accommodation in England and Wales for the treatment of air raid casualties in the event of hostilities. For Scotland the Department of Health has assumed corresponding functions.

Among the appendices of more general interest may be mentioned Appendix A (Fatalities in the United States of America from "Elixir Sulphanilamide"), illustrating the tragic possibilities which may accrue from placing untested drug preparations on the market; and Appendix B (Advances in Knowledge of the Streptococcal Infections), the streptococci being a group of organisms which probably do more damage to the public health than any other bacteria.

HOSPITAL ZONES IN WARTIME

Following upon the International Red Cross Conference held in London last June, a committee of military and legal experts met in Geneva on October 21 and 22 to draw up suggestions for a convention for the establishment of hospital or sanitary zones in time of war. Eighteen countries were represented by about forty experts, some appointed by their Governments, some by their National Red Cross Societies, and a certain number by both. The British representative was Lieutenant-General Sir Harold Fawcus, Director-General of the British Red Cross Society. Other Governments represented were those of Germany, Belgium, Denmark, Latvia, Poland, Sweden, Italy, Switzerland, Yugoslavia, Turkey, and Brazil. Insurgent, but not Republican, Spain was represented. After a long discussion, in which the main contest lay between the military and the legal points of view, a convention was drafted which will be submitted to the Swiss Government with a view to the assembly of a diplomatic conference for approval of the convention and its attachment to the Geneva Convention of 1929.

New Draft Convention

The articles of the new draft convention lay it down that hospital localities or sanitary zones intended to receive the sick and wounded shall be protected and respected by the belligerents. This benefit is to extend not only to the land but to the air. They will be reserved to the medical services of the armies to the exclusion of all other military uses. It is provided that they must be situated and maintained outside the field of operations, including the sea front, and sufficiently far from military objectives not to be in peril of bombardment. They must not serve as a refuge for persons who were not residing there before hostilities. The localities must be indicated visibly at their borders by the emblem of the Geneva Convention. In time of peace each of the parties to the new convention will communicate to the International Committee of the Red Cross a list of localities which it is proposed in time of war to assign for this purpose. At the

beginning or in the course of hostilities each contracting party must notify, again through the International Committee, the localities which it may be proposed to institute, specifying in an exact manner their position and boundaries. If the localities so designated are on a list which has been communicated to the International Committee at least three months before the beginning of hostilities any objections must be notified within three days from the receipt of such information, but if the localities did not appear in the pre-war list an interval of twenty days between notification and objection may be permitted. Other articles provide for the cancellation of the agreement with regard to a particular locality and the period which must ensue before such cancellation can become operative; also for a procedure of inquiry according to the articles of the Geneva Convention, in the event of dispute. In the case of the invasion of the country by an enemy the protected locality is to continue to be utilized as such, subject to the notification of opposition by the dispossessed belligerent.

The zones are to be subject to the control of a supervisory commission with at least three neutral nationals nominated by the International Committee and agreed by the State on whose territory the localities are situated. Each member of such commission may, at the discretion of its president, be given a specified area to supervise. It will be the business of the commission to see that the rules of the convention are observed, to draw the attention of the belligerents to any infraction, and if no notice is taken of such warning, the supervisory function may be withdrawn and the belligerent States be so informed through the International Committee. A further requirement is that the belligerents shall facilitate to the fullest extent possible the task of the commission, in particular by affording its members the necessary privileges and immunities in the exercise of their functions. On a complaint that the conviction has been violated by an enemy a contracting party may demand an inquiry under Article 30 of the Geneva Convention.

The history of this subject goes back to 1933, when the seventh Congress of Military Medicine and Pharmacy, held at Madrid, made a recommendation for the establishment of hospital towns and areas to give shelter to sick and wounded members of the forces in time of war. A commission of medical and legal experts met at Monaco in 1934 to formulate a draft, and the fifteenth International Red Cross Conference, held at Tokyo later in the same year, asked the International Committee and the National Red Cross Societies to consult their Governments with a view to stimulating action along these lines. A meeting of experts was held in 1936, at which further discussion of the problem raised a large number of essentially military questions, and a year later, at another meeting of experts, called with a view to the revision of the Geneva Convention, this question was again approached, and it was recommended that all national societies which had not yet communicated the opinion of their Governments should be once more consulted. This was done, and a report was made to the International Red Cross Conference in London last June (*British Medical Journal*, June 25, p. 1381, and July 2, p. 32), of which the recent meeting at Geneva is a consequence.

G. Barbagallo (*Policlinico*, 1938, **45**, 230, Sez. Med.), who reviews the literature and records his personal observations on twenty-one cases, consisting of one of subacute endocarditis, six of undulant fever, and fourteen of typhoid fever, states that in some infectious diseases it is possible not only to isolate the pathogenic organism from the sternal bone marrow, but also to obtain it from the bone marrow when it cannot be found in the peripheral blood. Moreover, it is possible to cultivate it from the sternum at times when blood culture is not possible, as in advanced stages of the disease or when the fever is not very high. The technique of puncture of the manubrium sterni according to Arinkin's method and with Baserga's needle appears to be simple and harmless.

LUNACY AND MENTAL DEFICIENCY

BOARD OF CONTROL ANNUAL REPORT[1]

Statistics of mental disorder and deficiency vary little from year to year. The curves for admissions and ascertainment tend to rise slightly, but not enough to cause misgiving. Far more mental defectives have to be dealt with than in years gone by, but that is because of the greater thoroughness with which such cases are reported to the local authorities. The population of mental hospitals rose during 1937 by about 2,000, but it is emphasized that this has no necessary connexion with the incidence of mental disorders in the general population, being merely the increase shown by the excess of admissions over the combined deaths and discharges.

One unexplained feature this year is that the reduction in the number of certified admissions to the mental hospitals, which was so marked in 1934 and 1935, has been checked, although at the same time there has been a rise in the number of voluntary admissions. The latter increased by just over 1,500, but admissions under certificate fell only by some 300. The total admissions to public mental hospitals were 26,892, the voluntary ones accounting for 8,414. At the end of 1937 the number of persons suffering from mental disorder—voluntary, temporary, and certified patients—notified as under care in England and Wales was 157,353, an increase of 1,831 on the figure for the previous year.

The death rate in the hospitals rose slightly to 7 per cent., an increase of no statistical significance, and the rate remains remarkably low when the high proportion of senile patients and patients in a physically enfeebled state is remembered. Diseases of the myocardium remain the largest single cause of death. There were only fifty-nine cases of enteric fever during the year, with twenty-five deaths. Tuberculosis of the respiratory system accounted for 539 deaths, a ratio of just over 4 per 1,000 resident patients. Out of a resident population of 136,721 patients in mental hospitals at the beginning of 1937, 9,544 were discharged during the year as recovered and 6,997 as relieved. The recovery rate per cent. calculated on the direct admissions was 31.2 (29.1 for males, 32.8 for females).

Out-patient Centres and Private Practitioners

The Board hardly conceals a certain disappointment at the way in which out-patient centres are developing. The number of such centres under the Mental Treatment Act in England and Wales is 167, a slight gain on the year, but the Board feels that there is still ground for criticism in that many of the centres are mainly diagnostic in character. The value of early diagnosis is not minimized, but it is felt that more continued treatment of those mental disorders which do not necessitate institutional care might be afforded. The difficulty is the insufficiency of staff. "If centres continue to be staffed insufficiently by doctors who have to give up (as many do) part of their leisure to out-patient work, there can be little hope of improvement in this direction."

The Board has emphasized in former years the importance of associating mental hospital staffs with the out-patient centres, but it points out that this does not mean that the centres must necessarily be staffed by whole-time doctors. The instance of St. Albans Clinic is quoted, where psychotherapists in outside practice have been employed, and the Board suggests that this system is one which might well be tried elsewhere. One argument in its favour is that it would give suitable practitioners a chance to establish themselves in private practice in this branch of medicine—a difficult thing to do outside London.

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[1] Twenty-fourth Annual Report of the Board of Control for the Year 1937. Part I. London: H.M. Stationery Office. 1937. (Pp. 84. 1s. 6d. net.)

Higher Posts in Mental Hospitals

Another criticism which the Board makes is with regard to the tendency to fix at an unduly low level the upper age limit for appointment of superintendents of mental hospitals. In one case the upper age limit was 40, a condition which must restrict the field of selection.

"We do not undervalue the energy and enterprise of youth, but we feel that appointments involving the care of large numbers of sick persons, to say nothing of the control of mixed staffs often running into hundreds, call for experience and a knowledge of the world which few can acquire without a reasonably long training as a second-in-command. If it is true that most people learn mainly by making mistakes, it is at least equally true that the mistakes made by a deputy can usually be corrected, while the mistakes of a superintendent seldom can be without at any rate a disastrous loss of prestige. Moreover, these premature promotions mean that the top post may remain in the same hands for a longer period than is, in general, desirable. . . . We are opposed to a system which determines success or failure before a man has reached the middle of his medical career."

This is said particularly in connexion with the appointment of medical superintendents, but there are intermediate appointments to which the same principle applies.

The reluctance of some authorities to appoint a medical superintendent at an early stage in the development of a mental deficiency colony is also regretted by the Board. Apart from the need for expert advice in organization and the planning of extensions, there are many ways in which a growing colony needs a medical head. It is admitted that there may be occasional exceptions, but a non-medical administrator, even with nursing experience, cannot be expected to organize the daily treatment of patients and to direct the staff in a colony of 300 or 400 patients of both sexes.

"Success or failure in the future depends largely upon creating a sound organization and a good tradition. To postpone the appointment of a medical superintendent until the necessity for one can no longer be ignored may appear to be an economy, but it is the kind of economy which, in the long run, is apt to prove very expensive."

No visiting medical officer can have the same knowledge of patients as a resident who has them under constant observation.

Mental Deficiency

The statistics of mental deficiency, interesting and abundant as they are, throw no clear light on the prevalence of such deficiency, nor do they allow comparison of one area of the country with another. High figures may merely mean unusual activity on the part of the authorities. The figures do vary remarkably with areas. Take the two areas at the top of the list—the county of Cardigan with 7.69 reported defectives per 1,000 of the population, and the county borough of Walsall with 7.09. Cardigan has ascertained as subject to be dealt with only 1.27 per 1,000, and has actually placed in institutions or under community care only 0.25, while Walsall has ascertained 4.77 per 1,000 and placed 4.34. The lowest proportion reported in any area (1.9 per 1,000) is in West Hartlepool; the local authority has ascertained them all as subject to be dealt with, and has placed in care 0.83 per 1,000. In only a few cases do the numbers in institutional or community care closely approximate to the number ascertained: one instance is Bradford, where 3 per 1,000 of the population have been ascertained and 2.99 placed. Ascertainment, as the Board points out, is undoubtedly the first step, but it may be a useless one unless followed by the provision of care and training both in colonies and in the community—that is, under licence, guardianship, or statutory supervision.

Prominence has been given to the whole subject of the community care of defectives by a law case in Lancashire relating to a patient who was granted licence under the Mental Deficiency Acts. The Board in its report deals extensively with the considerations which should be borne in mind and the steps which should be taken before patients are sent out on licence. The advantage of licence over other forms of community care during the critical years of transition from an institution to life in an outside community lies chiefly in its elasticity and lack of formality. It is intended that it should provide supervision and practical help for defectives, and the power of quick action retained by the superintendent of the institution makes it a safe and favourable form of family care during the years of trial. The number of defectives on licence, under guardianship, and under statutory supervision is 70,500, or 56.2 per cent. of the whole number of known defectives.

At the beginning of the present year close upon 122,000 defectives, whether subject to be dealt with or not, had been reported to local authorities, an increase of 4,830 over the previous year's figure, and almost exactly double the figure of ten years ago.

A.R.P. in Mental Institutions

The Board receives numerous inquiries as to what air raid precautions ought to be adopted in mental hospitals and mental deficiency institutions. While it is difficult to believe that the most vindictive enemy would deliberately bomb a mental hospital, such hospitals are large and imposing buildings and might be mistaken for objects of military importance. In one hospital a protective scheme has been devised and air raid drill practised with success. Patients of the better types have shown an intelligent interest in the drills, have learned how to use gas masks, and some of them have acted as wardens. One report suggests that panic is less probable among the mentally sick than among the general population.

Not often does the Board receive from a patient what it can describe as an eminently sensible suggestion, but one such has been received this year from a patient at Claybury, that visiting chiropodists might with advantage be employed in mental hospitals.

The Board sent two of its commissioners (Dr. Rees Thomas and Dr. Isabel Wilson) to Budapest, Vienna, and Frankfort to study the technique of the cardiazol treatment of schizophrenia. Without making extravagant claims either for this treatment or for treatment by insulin shock, the Board feels that it is most encouraging that at last a determined effort has been made to devise some active treatment for a form of mental disorder which has hitherto proved so intractable. Even if it be true that some of the recoveries might have been effected by the older methods, the speeding up of recovery under these new treatments is a great advantage.

At the end of the report the Board hands the British citizen the bill. The total net cost of mental hospitals, including loan charges, is £9,253,528, and of certified mental deficiency institutions £1,348,846, in both cases an average of about 27s. or 28s. a week for each patient.

A report on the use of celluloid in the manufacture of toys, fancy goods, and other articles (Cmd. 5790; Stationery Office, 9d. net) has been issued by the Departmental Committee appointed by the Home Secretary a year ago. It is recommended that the use of celluloid as a component of combs, cuffs, collars, shirt fronts, and hair ornaments should be prohibited. The report also draws attention to the illicit trade in inflammable film known as "junk," and suggests that its sale or hire should be prohibited. Any celluloid articles such as dolls, combs, and similar articles which are at present on sale should be clearly and conspicuously marked "celluloid."

Reports of Societies

THE FEMORAL NECK IN CHILDHOOD

In the Section of Orthopaedics of the Royal Society of Medicine on November 1 Mr. ROBERT OLLERENSHAW delivered his presidential address on "The Femoral Neck in Childhood." During the whole of life, he said, the femoral neck was a vulnerable structure, but at no period was it more subject to various pathological changes than in infancy and adolescence. He gave a long list of these changes, but concentrated on two of them—namely, that type of coxa vara which, for want of a more scientific name, was called infantile coxa vara, and "slipped" upper epiphysis.

Infantile Coxa Vara

Mr. Ollerenshaw's personal cases numbered sixteen in all, ten of them bilateral and six unilateral. The average age of the group was 6 years. The clinical signs were a rolling gait, lordosis, raising of trochanters, loss of abduction, and complete absence of pain. A striking feature in all his patients was their smallness of stature. With regard to aetiology, there appeared to be no hereditary influence, there was an absence of any history of trauma, and there were no signs of rickets. The pathological changes were those of an aseptic necrosis, followed by regeneration of bone. He had found no changes in the blood calcium and blood phosphorus. The condition in its very earliest stages presented small areas of rarefaction in the femoral neck, increasing rapidly in size, and coalescing to form the area usually found when these patients were first examined. The condition became rapidly worse, and eventually, if not treated surgically, ended with the head of the femur several inches below its normal position, with almost no femoral neck at all, complete inability to abduct, and an extremely difficult gait. Treatment consisted of a wedge osteotomy, the wedge being sufficiently wide at its base to allow the femoral neck and shaft of the femur to come into line. This necessitated a very wide abduction, and unless this apparently exaggerated abducted position was produced the operation might fail to yield its desired effect. After the osteotomy was done the body weight was carried almost vertically through the femoral neck, and not across it as before. The neck then became changed in character and developed into a real bony structure.

"Slipped" Epiphysis

Turning to his second group of cases, those of "slipped" upper epiphysis of the femur, Mr. Ollerenshaw said that he had had twenty-two of these. All the patients were between 13 and 16 years of age. Slipping of the upper femoral epiphysis was not the result of trauma, but of disease, and was chiefly concerned with endocrine imbalance. The very large proportion of cases exhibiting definite disturbance pointed quite clearly to the underlying cause. It was clearly established by experiment that trauma to the upper end of the femur would not produce a clean separation of the normal epiphysis. The traumata which were often reported in cases of slipped epiphysis were too trivial to produce even a fracture of the femoral neck, let alone to separate the epiphysis. In the case of a diseased epiphyseal line, however, the normal body weight alone was enough to cause a slip. His patients, with two exceptions, were "heavy" children, eleven of them being of the adiposo-genitalis type.

Most anatomical textbooks put the age of union of the upper epiphysis at 18 years. He believed it was actually considerably earlier, probably from 14 to 16 years. In his opinion repair of a slipped epiphysis took place by bone. He said this for two reasons: (1) he believed there was no recorded case of a slipped epiphysis giving way for a second time after it had once been united; and (2) in a case upon which, because of gross displacement, he had to operate he observed that the two separated surfaces contained bony elements.

If these children could be caught in the pre-slipping stage—a period in which there were complaints of occasional aching or limping—they should be immediately fixed in plaster and all weight-bearing prevented for three months, followed by calliper for six months. The opposite hip must be carefully examined and regarded with suspicion. In no case had Mr. Ollerenshaw observed definite pre-slipping changes which could be demonstrated radiographically. He had followed two lines of treatment. For those in which the slipping had recently occurred he did replacement under anaesthesia and fixation in plaster. Other cases, which were of some weeks' standing, and in which manipulative treatment could not be effected, he treated by subtrochanteric osteotomy, and abducted the limb sufficiently to reproduce the normal angle of the neck. These cases were given the same period of prevention of weight-bearing as the first group. The cases in which osteotomy was done were undoubtedly functionally satisfactory, but, of course, a little shortened. Manipulation and replacement in the normal position of neck and epiphysis, followed by plaster fixation for three months and subsequent prevention of weight-bearing for a further six months, might be relied upon to produce a very large proportion of good results.

HAEMOLYTIC STREPTOCOCCAL INFECTIONS IN RELATION TO NOSE AND THROAT

The annual Semon Lecture under the auspices of the Section of Laryngology of the Royal Society of Medicine was given on November 3 by Mr. W. M. MOLLISON, whose general subject was "The Laryngologist's Debt to Research." Mr. Mollison quoted from McBride, who delivered the first lecture, to the effect that most of Semon's writings touched on the borderland between general medicine and laryngology, and said that it was that borderland which he proposed to explore. His exploration, however, was devoted to only one sector—namely, acute infections with the haemolytic streptococcus in the origin of which the throat and nose played such an unenviable part.

Mr. Mollison said that haemolytic streptococci were found more often in carriers than in cases of acute infection. No other organism showed so high a disproportion between carriers and disease. D. Colebrook had proved that the nose was far less to blame than the throat. Of fifty-seven cases swabbed, only three had the haemolytic streptococcus in the nose and not in the throat, and in a series of 500 swabbings of the nose and tonsils of doctors, nurses, and attendants (on parturient women) in only 5.4 per cent. were haemolytic streptococci found in the nose, while in 20.3 per cent. they were present in the throat. As the presence of the haemolytic streptococcus was so frequent—one in seventeen of the population carried it—what prevented them all from contracting or taking the infection?

Factors concerned in Resistance

Two groups of factors were concerned in resistance—namely, blood and tissue resistance, which he would not consider, and secondary factors, general and local: the first category included age, sex, nutrition, avitaminosis, fatigue, climate, associated and subsidiary infections, crowding, and the carrier rate; and the second category, the skin and mucous membrane, tonsils, mucus in the nose, and organisms in the throat. Among these local

factors he dealt particularly with the tonsils, which, though a splendid barrier against infection, did sometimes fail and became a focus. When the tonsils were attacked by an overpowering infection they might become an active source of general infection, and their removal, even in the acute illness, might then be advisable.

It was probable that the presence of haemolytic streptococcus in the throat made it less likely that the host would suffer from acute tonsillitis. It was common knowledge that doctors and nurses were open to infections on returning to work after a holiday during which they lost their immunity and presumably their streptococcus. Fever hospital nurses during their first weeks of service were susceptible to streptococcal tonsillitis, but as they became passively immunized the incidence of cases fell sharply.

There were two principal causes for the origin of infection by the haemolytic streptococcus, one of them milk (not in the province of the laryngologist, except that infection of milk might arise from throat infections in those handling it), and the other an infected person, a so-called contact. Infection originated from a contact or carrier directly, indirectly through a third person, or by droplet infection, this last being the most frequent method of spread. Infection could also be carried in dust, and also, rarely, be air-borne. The lecturer mentioned experiments which suggested that the haemolytic streptococcus could survive for as long as ten weeks in dust.

Prevention of Infection

On the subject of prevention Mr. Mollison said that, not unnaturally, the prevention of cross-infection had exercised the minds of all those in charge of hospitals. As the type of infection never changed among cases of the same type in a ward it followed that they could safely be nursed together. Patients nursed in cubicles only acquired fresh infections introduced by nurses or maids. A sister with even a slight cold could introduce a fresh type, and to prevent this efficient masking should always be practised. The fact that cubicle nursing gave a high degree of protection was emphasized by the following instance: of 167 children suffering from measles nursed in an ordinary ward of twenty-six beds—not crowded—twenty-three died—that is, 14 per cent.; while of 150 nursed in isolation wards only six died—that is, 4 per cent.

Ideally each patient should be isolated in a cubicle and the utmost care be exercised to prevent the introduction of infection by those entering. Alternatively, the exact bacteriological grouping of the infective streptococci in the throats of all persons admitted to hospital should be carried out, and those with the same group nursed together. Both these plans presented considerable difficulties. Actually the method generally in use was so-called bed isolation. It had been found that in the prevention of cross-infection the distance between cot or bed heads was more important than air space per bed.

The Common Cold

Mr. Mollison added a few words on the common cold. The adult carrier was a menace to children, but adequate masking had been shown to be effective in preventing catarrhal infections. As a result of masking of nurses and doctors enteritis (due to catarrhal infection) could be eliminated from children's wards. As an illustration of the extreme difficulty of preventing infection by the virus of the common cold, he mentioned that an infected person prepared food for chimpanzees, which are susceptible to colds, and in spite of very careful antiseptic precautions on the part of those who distributed the food the animals became severely infected.

Laryngologists might think (said Mr. Mollison in conclusion) that bacteriologists took too jaundiced a view, but the tragedy of death from septicaemia after a simple "clean" operation, or after a straightforward removal of tonsils and adenoids, or after a normal childbirth could not be minimized, and must convince everyone of the vital importance of making a wide search to discover and eliminate the infecting streptococcus. There were, nevertheless, some who felt that the risk of infection from the streptococcus in the normal throat was very remote; they would rely on local examination by an expert to decide if there was any inflammation in the throat and nose, as the risk of infection was then much enhanced. This seemed to be placing a great responsibility on the laryngologist, and one which many would be reluctant to shoulder. What was a "clinically" normal throat? Every laryngologist knew how impossible it was to say that the tonsils were not an infecting focus. The only rational conclusion to be drawn was that bacteriologists must be the final arbiters.

CROHN'S DISEASE

At a meeting of the Devon and Exeter Medico-Chirurgical Society on October 27 Dr. A. Austin Eagger read a paper on Crohn's disease.

Dr. Eagger said that the condition was described first by Combs and Saunders (1813) and later by Abercrombie (1828). Brann and Le Dentu (1909) called attention to non-specific inflammatory tumours of the intestine. Moschowitz and Willensky (1924) described four cases, in three of which the caecum and ascending colon were affected; in the fourth case the splenic flexure was involved. Crohn and others (1932) defined the condition as a regional ileitis, "a disease affecting the terminal ileum of young adults and characterized by subacute or chronic necrosis with scarring and ulceration of the mucosa, accompanied by exuberant fibrosis leading to stenosis or fistula formation." Diarrhoea was always present. Later reports by Edermann and Burt, Harris Bell and Brun (1933), Jackman (1934), Erb and Farmer (1935), Mayer and Rosi (1936), and others showed that Crohn's original definition needed some modification. Cases had been noted at ages ranging from 2 to 60; diarrhoea was an inconstant feature; and regions of the intestinal tract other than the ileum might be affected.

Four Clinical Types

Four clinical types were now recognized: (1) acute cases with signs of intra-abdominal inflammation; (2) cases with symptoms of ulcerative enteritis; (3) cases with stenosis and symptoms of chronic obstruction; and (4) cases with persistent external or internal intestinal fistulae. The stenotic type seemed to be the commonest. The acute type might resolve or develop into one of the other three types. In the ulcerative type there was a history of diarrhoea with loose offensive stools, which might contain pus, blood, or mucus, accompanied by attacks of colicky abdominal pain, nausea, loss of weight, and mild pyrexia. A tender mass was typically to be felt in the right lower quadrant of the abdomen and there was a mild leucocytosis with marked secondary anaemia. Stenotic cases show the symptoms of partial obstruction and a tumour was sometimes palpable. In the fourth group the usual history was that of fistulae appearing and persisting after appendicectomy for supposed appendicitis.

The aetiology of the disease was uncertain. Erb, in his cases, recovered a coliform organism from the mesenteric glands, liver, and gall-bladder. Relphs suggested that the inflammation occurred in response to a low-grade infection, possibly conveyed by foreign bodies. Mailer had found a streptococcus of the *viridans* group in the blood stream in some cases. Differential diagnosis was difficult: in the acute cases, from bacillary dysentery and appendicitis; in the chronic, from malignant disease, the specific inflammations, ulcerative colitis, tuberculosis, Hodgkin's disease, and actinomycosis. Hourly radiological examinations after the administration of a barium

enema might enable the diagnosis to be made. Kantor stated that loss of segmentation and peristalsis in the lower ileum gave early radiological evidence of the disease. Later, filling defects in the terminal ileum appeared and the so-called "string sign"—a thin irregular streak of barium connecting the dilated ileum above to the caecum below—was characteristic if present. If the condition did not resolve spontaneously it progressed steadily and ended fatally if not surgically treated.

Case Report

Dr. Eagger described a case under his own care. The patient, an unmarried woman aged 43, had had jaundice fifteen years before and frequent attacks of vague abdominal pain ever since. In January last she had an acute attack of lower abdominal pain, accompanied by rigors, pyrexia, and vomiting, and followed by persistent mild constipation. When Dr. Eagger first saw her, on April 17, she had a furred tongue, a normal temperature, and a pulse rate of 80. There was tenderness and rigidity two inches below and to the left of the umbilicus. A radiological examination of the alimentary tract three days later was negative. A catheter specimen of urine examined on May 10 was normal, but four days later she had an acute attack of pain followed by haematuria. A specimen of urine collected the following day contained pus, red cells, and staphylococci. There was a polymorphonuclear leucocytosis, and a left retrograde pyelogram revealed no abnormality. An intravenous pyelogram a week later was normal and so was a catheter specimen of urine collected on May 24. Throughout this period there was marked wasting, weakness, anorexia, and depression. On May 25 visible peristalsis was observed. Laparotomy by Mr. A. L. Candler five days later revealed in the mid-portion of the ileum a tumour-like mass about eight inches long, which was densely thickened and reddish purple in colour. The mesentery was thickened and the glands enlarged. The affected gut was resected and a lateral anastomosis performed. Recovery was uneventful.

Dr. W. A. Robb examined the resected portion and reported as follows: "The specimen consisted of ten inches of small intestine (ileum). The proximal two inches were dilated and showed a moderate degree of hypertrophy. The subsequent seven inches showed a very dense infiltrative hypertrophy with increasing stenosis of the lumen, which would barely admit a quill pen. The mucosa appeared to be covered with a yellow slough. The mesentery associated with the hypertrophied area was also densely thickened and appeared to consist largely of fibrous tissue. Microscopically the lesion appears to be subacute inflammation affecting the mucosa, submucosa, and muscular layers, and the subperitoneal tissue. There are numerous lymphocytes, plasma cells, fibroblasts, polymorphonuclears, and eosinophils, together with a few giant cells. Histologically the picture is that of regional ileitis."

At the same meeting Dr. FRANK ROPER discussed the association between polycystic renal disease and cerebral "berry" aneurysms and described an illustrative case.

SERIAL RADIOGRAPHY IN CHEST DISEASE

At the opening meeting of the North-Western Tuberculosis Society at Manchester Dr. G. JESSEL, in his presidential address on serial radiography in pulmonary disease, said that radiology was the most important single factor in the diagnosis of pulmonary disease as it enabled an accurate diagnosis to be made earlier than was usually possible by clinical methods alone. Fortunately the provision made for *x*-ray examination throughout the country was steadily increasing. Serial radiography, by which was meant the taking of two or more radiographs of the same patient at one time or at intervals, was desirable both in diagnosis and in treatment. As regards diagnosis the initial antero-posterior radiograph was frequently inadequate, and further radiographs could be usefully taken in oblique, lordotic, or lateral positions. Again, it might be necessary to take another radiograph after a short interval of time, when the appearances might be entirely different—for example, in inflammatory conditions, and particularly in the pneumonias. Stereoscopic films were a form of serial radiography, but had the disadvantage that they were expensive as a routine procedure. The tomograph also was able to provide useful series of radiographs illustrating the condition at various distances behind the sternum.

Turning to treatment, Dr. Jessel said that whenever any form of special treatment was attempted a series of radiographs was essential, especially in artificial pneumothorax. Whenever other forms of treatment were used—for example, gold or cadmium—serial radiography enabled the progress of the case to be followed. As Wingfield had shown, the direct spread of a temporary quiescent tuberculous lesion in the lungs could frequently be detected only through serial *x*-ray investigation. In chronic pulmonary tuberculosis the physical signs were often vague and indefinite, and routine radiography at intervals enabled the progress of a patient to be watched and his condition assessed. In this way the pathological changes associated with tuberculosis—for example, fibrosis and calcification—could be followed. In dispensary and private practice a comparison of radiographs taken before and after treatment gave useful information and provided a permanent record.

The cost of serial radiography might be urged as a serious objection, but where *x*-ray facilities were available it was economical, within limits, to make full use of the apparatus, and the information thereby obtained was well worth the money expended.

The inaugural meeting of the Midland Medical Society took place on October 26 at the Midland Hotel, Birmingham, under the presidency of Professor SEYMOUR BARLING. After a dinner, which was attended by over seventy members and guests, the inaugural address was delivered by Sir JOHN FRASER. His subject was the history of the circulation. He gave credit to Servetus, who first described the pulmonary circulation. Harvey's experiments on veins and their valves were described, and the lecturer concluded his address by a summary of modern knowledge of the treatment of circulatory disease. Professor LEONARD GAMGEE, in proposing a vote of thanks, pointed out that William Withering, who introduced digitalis, was a physician in Birmingham.

The Midland Mental Pathological Society held its ninth general meeting in the New Medical School of the Birmingham University on November 3. Professor H. H. Woollard, M.D., F.R.S., of University College, London, gave a paper illustrated by lantern slides on "The Innervation of Blood Vessels." He dealt with the origin and course of sympathetic fibres to the arteries and arterioles in the limb; nerve fibres were also illustrated having a probable relation to the nocifensor system and to muscular pain. Professors R. D. Lockhart and H. P. Gilding, Mr. F. R. Stammers, F.R.C.S., and Drs. T. C. Graves and F. A. Pickworth took part in the discussion which followed. There was an appreciative audience of twenty-five members and forty-two visitors.

The sixteenth Voyage de Noël on the French Riviera will extend from December 26, 1938, to January 1, 1939. The cost of this six-days tour is 1,500 francs, and the itinerary may be obtained from the Federation of the Health Resorts of France, the English office of which is at B.M.A. House (North Wing), Tavistock Square, W.C.1. This charge is exclusive of the journeys between England and Cannes, where the tour will start; places to be visited include Antibes, Grasse, Vence, Cap Martin, Monaco, and Nice.

Local News

ENGLAND AND WALES

Great Ormond Street Hospital for Sick Children

The recent opening by the King and Queen of the rebuilt and reconstructed Children's Hospital recalls that this institution was the first and for some years the only children's hospital in the United Kingdom, serving as a model for the other children's hospitals subsequently established. The new building has risen chiefly on the site of the former garden. It has seven stories constructed to accommodate 326 patients, including wards for thirty-six private patients, three operating theatres, and various laboratories, kitchens, and the other departments required by a modern hospital. What is left of the old hospital is at present housing the out-patient department, which is now also being reconstructed. The eighty-sixth annual report of the Board of Management covers the calendar year 1937, and a short history of the hospital can be obtained from the secretary. Generous response to the rebuilding fund appeal has enabled the progress of the work to be accelerated, but it is announced that a further £250,000 is still required. In spite of the work of reconstruction the number of in-patients treated during 1937 exceeded that in 1936. The weekly average cost of in-patients increased somewhat, mainly owing to improvements in the dietary and the higher cost of surgical and dispensary supplies. The figures for the branch hospital at Tadworth Court were much the same as in the previous year, the work of the recovery section and the convalescent pavilion permitting continuity of treatment and medical research which would otherwise have been unobtainable. All appointments to the honorary and salaried medical staffs are now equally available to men and women. Although a larger staff is now employed, no additional expense has been incurred, thanks to the adoption of a new scheme suggested by the medical committee. In the medical report it is remarked that the appointment two years ago of a resident anaesthetic registrar has secured the keeping of accurate records of this important section of hospital work. Last year nearly 8,000 general anaesthetics were administered, and premedication has proved of great value in this connexion; of the patients receiving an anaesthetic in the in-patient department approximately one-third were relieved of all apprehension by this modern procedure. Prolonged desensitization against asthma was found to render the attacks less frequent and milder, though it did not prevent their occurrence. A new protective serum against scarlet fever was tried in one of the surgical wards with great success, the amount of injected material being very much smaller than any hitherto used. There was a great decrease in the number of children attending the department for venereal diseases, and since such a decline has been reported all over the country it is obvious that the intensive work in such clinics in past years has yielded valuable results and that these diseases are being controlled.

Birmingham Health Report

The report for 1937 of the medical officer of health for the City of Birmingham records a slight rise in the death rate, largely owing to the prevalence of influenzal conditions in the spring. On the other hand, the infant mortality at sixty per thousand has never been lower in the city, although equalled in 1930, while the maternal mortality also shows a gratifying reduction, especially satisfactory as evidencing a diminution in septic conditions in childbirth. The Birmingham birth rate shows a slight rise for the fourth year in succession, but this coincides with the highest illegitimate birth rate for ten years, attributable, so the report suggests, to the more general use of contraceptives regarded as certain preventives of the result of licence. During the year under review a municipal salaried midwifery service was established in accordance with the requirements of the Midwives Act, 1936. Following a number of compulsory and voluntary retirements the midwives available for the city at the end of the year totalled 158. Of these ninety-nine were city midwives, forty-seven independent, and twelve working under the Maternity and Queen's Hospitals. The emergency service for the domiciliary treatment of obstetric shock and haemorrhage was used for eight cases during 1937. All these patients recovered, and the consultants concerned expressed favourable opinions of the value of this service. Under the Public Health Committee's scheme general practitioners called in consultants for eighty-one obstetric and twenty-six puerperal cases.

SCOTLAND

Hospital Co-operation

In an address at the opening recently at Girvan of the annual Congress of the Royal Sanitary Association of Scotland, Dr. James M. Mackintosh, Chief Medical Officer of the Department of Health for Scotland, emphasized the necessity for co-operation between the voluntary and the statutory hospitals. He said that 1938 marked an important centenary in public health; before 1838 no Act of direct sanitary intention had been placed on the Statute Book. The increased interest in public health stood out as a feature of progress in the twentieth century. But the full implications of the modern doctrine of personal health had not yet been realized. Physical fitness alone was a barren ideal, and must be linked with some idea of what was to be done with the body when it was made fit. A re-examination of the whole educational system was necessary with a view to giving health education a central place. No scheme of medical services could be successful until there was a complete working arrangement between the voluntary and the statutory hospitals. With a wise use of existing resources the inadequacy of hospital accommodation would be relatively small. The principle of regional co-operation had been tried with considerable success in Aberdeen, and there was evidence of tentative schemes elsewhere. Co-operation had failed not because of lack of money or opportunity but because of lack of faith. There was a hesitation to take the necessary action because it would interfere with long-established practices.

On the second day of the congress, Dr. W. G. Clark, medical officer of health for Edinburgh, dealt with some aspects of public health policy. Regionalization, he said, was an important matter at the present time, for local public health organizations were generally too small to deal with exceptional circumstances such as outbreaks of infectious disease. When public health measures were regionally administered, consulting staffs were available, large hospitals of 400 to 500 beds were more economically equipped, and in the event of an epidemic the whole resources of the region were at the disposal of the locality involved. Such schemes could only be carried out when a large centre was included, and it was doubtful if any area of less than 100,000 population could afford to maintain what was now regarded as a complete health service. With regard to infectious disease, he urged that a central register of carriers should be prepared and kept by the Department of Health.

Hospital Extensions

At the opening of an extension to Galashiels Hospital, which has cost £25,000, Sir John Fraser of Edinburgh University said that voluntary hospitals were encountering difficulties in obtaining sufficient money to maintain the usual standard of efficiency and at the same time to make necessary extensions. The problem of hospital adminis-

tration had been discussed for several generations. The treatment of patients in small country hospitals not only relieved suffering locally but afforded opportunity for a corresponding number of patients to be treated in the hospitals of the larger centres. The importance of this type of assistance was not sufficiently recognized, and if it could be made more general it would go far to solve difficulties of the larger hospitals. Illness was often more easily borne in the quietness of a country town than in a big city, and he believed that this factor would be increasingly taken into consideration in the hospitals of the future. The extension provides a new wing with a public ward and several private rooms, and in addition there is a new operating theatre, laundry, and kitchen, and an up-to-date *x*-ray installation. The hospital, which previously accommodated fourteen patients, has now thirty-one beds.

An auxiliary hospital to the Dumfries and Galloway Royal Infirmary, which has been provided at a cost of £18,000, was opened by the Earl and Countess of Mansfield on November 3. The Earl of Mansfield explained that this addition, the Grove Convalescent Home, would provide accommodation for fifty-five patients, and that the directors also contemplated an extension to the infirmary, but there had been delay in the latter scheme owing to negotiations with local authorities, who desired to reserve for their own needs some seventy beds in the institution.

Correspondence

Treatment of G.P.I.

SIR,—Dr. B. H. Shaw's letter in your issue of October 29 (p. 917) quotes some figures purporting to show the results of different methods of fever therapy in G.P.I. Statistical evidence readily lends itself to misinterpretation. I would stress the fact that clinical recovery is not an accurate criterion of the efficacy of any type of treatment. It seems unlikely, having regard to the histopathology of the disease, that therapy does more than destroy the syphilitic infection whereby, although inflammatory changes may resolve, degenerative changes persist. Thus the resultant clinical picture will depend on the degree of degeneration present before treatment is begun. Investigations carried out here have led us to the conclusion that the production of a normal cerebrospinal fluid is a more reliable gauge of the success of treatment than that of "clinical recovery." As regards the recovery figures quoted, it should be pointed out that the Board of Control figures relate to mental hospital admissions, many of the patients being already far advanced cases, whereas Neymann's figures refer to general hospitals as well as mental hospitals.

Regarding the mortality rate of malaria therapy, I would like to quote from the records of patients treated here between June, 1937, and June, 1938; this time period was selected purely at random, and may therefore be regarded as a sample of our general results. During this time 107 men and fifty-six women were admitted suffering from G.P.I., and of these 100 men and forty-five women were treated by malaria. Among the women no deaths occurred either during the course of malaria or within a few weeks after; of the men three deaths could be directly attributed to malaria; one of these developed severe cardiac asthma during fever and died from heart failure. At necropsy a plaque was found at the beginning of the left coronary artery, although the aorta itself was relatively healthy and careful examination of the heart during life revealed no abnormality; seven others died within two to three weeks following termination of malaria. It might therefore be argued that malaria was also responsible for their deaths, but in four the disease was well advanced before therapy was undertaken. Of the remaining three the cause of death was respectively appendix abscess, lobar pneumonia, and generalized boils. This death rate is little if any higher than that quoted by Neymann, and having regard to the very small number of cases left untreated it can on these figures be argued that malaria therapy is as safe as electropyrexia. Of the eighteen untreated cases seven were men, of whom two were treated with tryparsamide—one on account of his age and uncompensated cardiac condition and the second because of his emaciated condition; one died within five days of admission and four within six weeks. Of the eleven women, one died five days after admission, seven within four weeks, and three within three months.

Among cases treated successfully by malaria have been patients with aortic and mitral disease, diabetes, Huntington's chorea, and many cases of syphilitic aortitis.

As the treatment of G.P.I. by electropyrexia is of relatively recent origin, I can hardly agree with Dr. Shaw that "an authoritative comparison with other methods of treatment is *long overdue*." (The italics are mine.) It is not my purpose to decry the value of electropyrexia, but I am convinced that malaria therapy is still one of the most successful therapeutic agents in the treatment of neurosyphilis and is far from being the dangerous procedure it is implied to be in Dr. Shaw's letter.—I am, etc.,

Horton Hospital, Epsom, Nov. 1. W. D. NICOL.

Social Pathology

SIR,—Dr. A. J. Brock in his letter to the *Journal* of October 8 (p. 762) raises the question, "Is our nation becoming less healthy?" This is a very important question, because, as Dr. Brock notes, the future existence of the British peoples depends not only on a knowledge of the correct answer but also on action based upon this knowledge. What answer we give depends on the meaning we attach to the word "health." For example, we may consider national health in terms of height, weight, longevity, and freedom from devastating epidemics. Accordingly, when official statistics indicate that people are becoming taller and plumper, are living longer, and are free from severe outbreaks of infectious disease, we assert that the nation is becoming healthier. However, we must not forget that this assertion of improving health is really an inference based on an assumption, the assumption being that the needs of living men and women are exactly comparable to the needs of livestock—namely, suitable food, shelter, air, light, and physical exercise. In the past all "public health" measures and most "social" ones have been based on this essentially veterinary assumption. Indeed, it was inevitable that this should be so, because these needs are so obviously basic ones. Improvement in national livestock health has been effected therefore—at least in part—by a growing knowledge of the nature of these needs and by the application of measures directed against environmental factors which frustrate or deny the fulfilment of these basic animal needs. In practice this has been achieved by "public health" action in respect of impure or inadequate diet, improper housing, defective drainage, insufficient exercise, etc.

There is, however, another way of regarding health, and this is based on a different assumption. It includes the veterinary assumption, but regards it as partial and inade-

quate. It states that living men and women have another range of needs—for example, work, work to an end, leadership, a belief that life has a meaning or goal, etc. It also assumes that if these psychological needs are frustrated by environmental factors then the impulses behind them, being denied satisfaction, turn in upon the people and begin to destroy them. (A useful account of this assumption is given by Karl Menninger in his book *Man Against Himself*.) Sometimes the self-destruction is very obvious, as in suicide; sometimes less obvious but just as definite, as in chronic and recurring neurotic illnesses, as well as in many examples of organic sickness labelled by such terms as anaemia, rheumatism, gastritis, peptic ulcer, bronchitis, etc. (psychosomatic illnesses). Also, self-destruction may be manifested in a more remote way, as in the refusal to bring forth children. In other words, a community in which basic psychological needs are frustrated slowly falls sick, disintegrates, and decays. On this assumption statistical facts which reveal disintegration of this nature would be the following: (*a*) a rising suicide rate; (*b*) a rising incidence of psychoneurotic and psychosomatic illnesses; (*c*) a declining birth rate. All three of these trends are shown in our national statistics during recent years.

This second concept of "health" is nearer the proper meaning of the word, which originally referred to wholeness or integration. It also has reference to the ideas of vitality, efficiency, and life more abundantly. The question, "Is the nation becoming less healthy?" can no longer be answered with a vigorous and self-satisfied negative. The indices suggest the possibility of a very different answer. Failure to appreciate the deeper meaning of "health" and the absence of action against environmental factors (including social measures) which frustrate the basic psychological needs of a community will, on this second assumption, result in further disintegration.—I am, etc.,

Glasgow, Nov. 2. JAMES L. HALLIDAY.

Decline of Breast-feeding

SIR,—The unnecessarily high death rate from enteritis and diarrhoea in babies under 1 year still continues, and Dr. J. C. Spence (October 8, p. 729) is quite right in stressing the fact "that the encouragement of breast-feeding is one of the methods of combating the excessive infant mortality. But there are many who do not recognize it." He goes on to quote from the annual report of a medical officer of health in one of our large towns in which the medical officer advances the astounding proposition that breast-feeding on the whole is not a success, in fact that it is a more frequent cause of dietetic trouble than artificial feeding, and also affirms that he has not seen any evidence that convinces him "that the artificially fed child is more prone to disease or more likely to succumb to disease than his naturally fed brother"; finally, he thinks that the mother is better if she does not feed her child.

Again, some general practitioners in North Kensington formed a medical society with the object of investigating the cause of infant mortality in Kensington. Dr. Horace A. Nathan says (October 29, p. 916) that the following sentences may be quoted from their report: "If it is accepted that environmental conditions can so affect a mother that an infant at birth is lacking in vitamins, it seems likely that breast milk will be similarly lacking. Could a more unsuitable person be found to breast-feed this particular infant?" Of course, there is no shred of evidence to support this hypothesis. If only the doctors had spent their time and energy in studying the technique of breast-feeding they would have done valuable service in lowering the death rate. During the siege of Paris in 1870 mothers had to feed their babies on breast milk because no other food could be procured for them. The result was that the infant death rate declined considerably, the environmental conditions being anything but ideal.

The views which I have quoted show the direction in which some of the profession are influencing the mothers of our rising generation, and if it were not for the welfare centres, whose main purpose is to encourage breast-feeding in every way, possibly there would be little chance of keeping the death rate from enteritis even at its present level. I agree with Dr. Spence that about 95 per cent. of women can suckle their babies and that only 5 per cent. cannot do so for various physical reasons, but when he says that the mother should choose the times of feeding most suitable to herself and her child I really cannot agree. I should have thought that no one would question the importance of regularity of feeding times, as irregularity in this respect has been such a constant cause of vomiting and diarrhoea.

Thirteen years ago I was asked by the public health authorities to attend cases of enteritis and diarrhoea in their own homes when the mother could not afford medical fees. I have seen 1,500 such cases in their own homes during this period, and the mortality works out at 3.5 per cent. Most of these infants were artificially fed, and the cause of the illness was dietetic. No pathogenic organisms were found in the majority of cases. Outbreaks of Sonne dysentery occurred from time to time, but these were of a mild order, and the children usually were on the way to recovery in five days.

I have seen a considerable number of breast-fed babies with vomiting and diarrhoea. The treatment consisted in stopping the breast milk for twenty-four hours and allowing the baby to take as much water as he wanted. The next day breast-feeding was begun again; the vomiting usually stopped completely, but the diarrhoea continued for a few days and was treated by a bismuth and chalk mixture, three times a day. I never gave any artificial food. Some of these cases were in a good deal of pain, passing blood and mucus in their motions, and the mothers and doctors were anxious to stop the breast milk, but, luckily, they allowed me to pursue my course, and the results were excellent. I have never seen a fatal case of diarrhoea and vomiting in a baby that was being entirely breast-fed, except once in a child of 2 months who died from otitis media. The diarrhoea and vomiting was secondary to this, so that all the deaths in my series of cases occurred in artificially fed infants, except two who died from Sonne dysentery.

Over-feeding with breast milk, apart from attacks of diarrhoea and vomiting, has no disastrous effects such as one sees in artificially fed infants; it can be rectified by increasing the intervals between the feeds and only allowing the child to suck for three to five minutes at a time. I have seen infants put on weight in a satisfactory manner and remain satisfied on only three or four feeds in the twenty-four hours. The trouble arises when there is not enough breast milk; this may only be a temporary condition, but the error is often made of giving a bottle alternately with the breast, so that the child has three breast-feeds and three bottle-feeds in the day. This practice is wrong because the quantity of breast milk is sure to diminish owing to the lack of that stimulation which suction gives to the breast. A far better method is to give a complementary feed directly after the breast-feed and to give the artificial food with a spoon out of a cup instead of filling a bottle. After a week or two of this treatment the breast milk will often increase in quantity, so that the complementary feeds can be discontinued. I have often brought back the breast milk after the infant has ceased suckling for five weeks in cases in which the child was doing badly on artificial food. It only requires perseverance, and is always worth while provided one can squeeze a drop of milk from the nipple. In cases of mammary abscess in one breast the infant can be fed perfectly well on the other side.

I have only indicated some of the common difficulties in the technique of breast-feeding. I believe the importance of education is not sufficiently recognized, and under these conditions it is very alarming to see in a recent order of the Ministry of Health that panel practitioners attending postgraduate classes are not to receive instruction in diseases of infancy or childhood. Surely, in large towns among the poor and overcrowded population an up-to-date knowledge of the diseases of infancy and childhood is the most important branch of medicine for the general practitioner to study. I sincerely hope that the Ministry will reconsider its decision.—I am, etc.,

Kensington, Nov. 5. RONALD CARTER.

Prognosis of Anxiety States

SIR,—It would appear that Dr. Arthur Harris does not appreciate the significance of the criticism that has been made of his article on the prognosis of anxiety states (*Journal*, September 24). He set out to estimate the factors of prognostic importance in a follow-up of 123 cases (this was one of the stated objects of the investigation), but completely excluded the question of treatment. I pointed out that this was a curious procedure, and indicated that it rendered his results of little value. In your issue of November 5 (p. 966), however, Dr. Harris attempts to justify the omission on the singular ground that he "could not determine accurately how much and what type of treatment each case had received," and from other remarks he makes it is evident that the patients had received very different forms of treatment.

In effect, therefore, Dr. Harris has, evidently unintentionally, provided the answer to the question I put in my previous letter as to whether he considers that treatment is to be regarded as significant in estimating the prognosis in anxiety states, and his answer is in the negative. This may conceivably be true, but is it what he meant to imply?—I am, etc.,

London, W.1, Nov. 7. FREDERICK DILLON.

Thimble for the Surgeon

SIR,—Mr. Dickson Wright emphasizes justly the importance of Mr. T. E. Coulson's clinical memorandum in your issue of October 15. The use of a thimble to guard the finger when making a stab incision is a valuable device, especially in cases of acute peritonitis, and I am surprised to learn from Mr. Dickson Wright's letter that more use is not made of it, in spite of Sir William Wheeler's writings on the subject. Some surgeons, of course, disdain such adventitious aid and cut down boldly into the hollow of a cup made by the hand and fingers, but such a manœuvre presupposes an original incision which will admit the whole hand.

For some years I have used a finger shield made by Messrs. Down Bros. for the late Mr. C. P. Childe of Portsmouth.

> "The instrument allows free flexion of the finger. When used inside the abdomen, the forefinger encased in the finger shield, and the mid-finger, are inserted together. The latter feels that nothing is in the way, and the guarded finger is then cut down upon at once with a single stroke of the knife."

Personally I have found it more convenient to wear the shield on the mid-finger with a finger on either side to protect the viscera. As compared with a thimble, there is less danger of this instrument slipping from the finger, but a thimble is simple, efficient, cheap, and easily procured, and, as Mr. Dickson Wright says, should have its place in every surgeon's kit of instruments.

I am not sure that the suprapubic route to which Mr. Coulson refers is always the best in the treatment of pelvic abscess. In many such cases the abscess tends to point in the rectum or vagina, and on examination an area of softening will be readily appreciated on the wall of either cavity. Sinus forceps are sufficient to lay open the abscess. Drainage established by this route is dependent, and the abscess cavity closes in quickly. Contrary to what one might expect, the opening in the rectum or vagina heals smoothly. An additional advantage is the avoidance of a tube which traverses the peritoneal cavity.—I am, etc.,

MICHAEL J. SMYTH, M.Ch., F.R.C.S.

London, W.1, Oct. 31.

SIR,—In the *Lancet* of April 10, 1909, Mr. C. P. Childe described a metal finger-guard made by Messrs. Down Bros. for use in making a counter-opening. This guard has been in general use since that time, and it is less likely to slip off and is less clumsy than a thimble. Mr. Childe primarily advocated its use to supersede having to cut down on one's finger or on to an instrument inserted intraperitoneally. The latter method involved the risk of wounding intestinal tissue. The guard was to be worn on the forefinger, and the middle finger could then detect any intestine that was in the way. The thimble method, if preferred, should certainly be used in the same manner.

But there is still an element of danger. On one occasion when using the guard I wounded a piece of collapsed small intestine which had escaped notice on the thumb side. Fortunately I noticed a little bile staining on the bright nickel, and was able to find and hold the gut into the small wound with my thumb and repair it, with no bad result; but I feel sure that if I had been using a thimble I might not only have lost the gut but the thimble also and perhaps the patient.

A safe way is to displace the intestine with the middle finger, press it against the peritoneum, and then slide the guarded finger forwards to this spot before cutting down. —I am, etc.,

London, W.1, Nov. 7. G. H. COLT.

Septal Deflection

SIR,—I read with interest Mr. W. S. Syme's article on septal deflection in the *Journal* of September 24 (p. 656). At the Annual Meeting at Plymouth the subject was discussed, and I believe Dr. Ritchie Rodger said that the operation of submucous resection of the septum was probably not too often performed. From time to time rhinologists are cautioned against resorting to this operation on inadequate grounds. I am inclined to lean towards Dr. Rodger's point of view, as I believe that the operation will not be performed unnecessarily if the surgeon realizes that it is for the benefit of the patient and not for the benefit of himself. I agree with Mr. Syme that submucous resection of the septum is the favourite operation of some specialists. If it is their favourite operation because they do it so well in indicated cases, then I have no quarrel with them, since it is an operation which must be adequately performed. It can usually be performed once only, and it must therefore be a complete and not a so-called "partial" submucous resection, and special attention must be paid to the upper part of the septum opposite the middle turbinates. A patient on whom a partial submucous resection has been performed to remove an offending spur near the floor of the nasal cavity is as liable to develop frontal sinusitis after the operation as before if a deviation is left high up in the septum. I have on more than one occasion been put to a difficult task in performing an intranasal frontal operation in a case in which the chance of doing a submucous resection has been spoiled by such a partial resection. I believe

that submucous resection should be performed more often during other intranasal manipulations to give better access to the area of operation. If this were done, nasal polyps would be more effectively removed and ethmoidectomy more effectively performed; intranasal frontal operations would give better results; post-operative anterior rhinoscopy would more readily reveal recurrence of disease; and there would be less chance of adhesions after removing or attempting to remove polyps through a narrow nasal cavity.—I am, etc.,

National Hospital, Bloemfontein, South Africa, Oct. 21. J. E. Thomson.

Periodicity of Influenza

Sir,—Recent studies of neoplastic periodicity have shown (*Brit. J. Surg.*, 1938, **26**, 113) that in a number of patients the primary or recurrent malignant disease has followed about three weeks after an influenzal attack. In the attempt to collect further instances of this relationship I should be grateful for the help practitioners could afford me by sending me notes from their case-histories or from patients' diaries (1) of the exact dates of recurrent influenzal attacks, and (2) of any instances of malignancy following influenza.

Influenzal periodicity may be studied (1) in epidemics and (2) in individual patients' case-histories. The former has yielded valuable results. Taking the end-of-the-war severe epidemics there were three peaks, in July–August, 1918, in November, 1918, and March, 1919: these illustrate the "half-periods" noted in neoplastic recurrences as possibly due to a double strain; and following each strain in a thirty-three weeks' periodicity we can fit in all the succeeding major and minor epidemics, noting that in the summer months we have similar "missed periods" to those seen often in neoplastic diseases. The present rise was to be expected; the next major epidemics may be expected in February–March of 1939 or 1940, or in February, 1941, or in January, 1942 or 1943, as reference to the table of dates (loc. cit. above) shows.

But epidemics from their nature must have considerable variations, and the estimation of the precise periodicity is more likely to be obtained from individual patients' histories: in this way practitioners could render valuable assistance, as more knowledge of the periodicity of influenza would enable accurate predictions to be made of the months when serious epidemics are likely, and patients could take prophylactic measures, with a reduction in both influenzal and cancer mortality.—I am, etc.,

London, W.1, Nov. 5. J. H. Douglas Webster.

Cure of Colds

Sir,—Dr. J. B. Sherman's article on the prevention of colds (*Journal*, October 29, p. 903) prompts me to mention a method resulting in a quick cure or, one might say, an abortion of a cold. This method might be adopted by surgeons and physicians, and certainly by physiotherapists, for themselves and their families.

The treatment to produce abortion of the cold must be resorted to within the first few hours or at least on the evening of the day on which the cold appears, for then one or two treatments—in my own case one treatment—will result in the drying up of the nasal secretion, the disappearance of the sensation of fullness in the ears, and the vanishing of the husky voice with the production of an almost abnormally dry pharynx. It consists in placing the 6-metre short-wave glass-covered electrodes on each cheek: the metal electrode is withdrawn, so as to heat the deep tissues more than the skin, and the treatment is applied for ten to fifteen minutes. If one has a proper fear of a cold one has a treatment twice on the first day and, if necessary, on the following day. Elderly patients—even if one avoids the caloric reaction by applying the same heat to each cheek—will feel giddy for five minutes following the treatment, and so must sit still after it.

Incidentally this treatment when repeated is excellent for acute sinusitis, and in the case of subacute sinusitis, when the fear of dissolving the toxins in the nose with water has vanished, it can be combined with the use of Lowndes-Yates suction apparatus.—I am, etc.,

Harrogate, Nov. 1. W. S. Thacker Neville.

Civil Medical Organization in War

Sir,—If we are to judge by the conversation of many of our colleagues in recent weeks the medical profession as a whole is greatly concerned with the organization of medical services in time of war. It may well be that the Government has a practicable scheme prepared, but with the evidence of general muddle in the past few weeks still fresh in our memories we can be forgiven if we continue to harbour misgivings. The history of the A.R.P. Department of the Home Office is hardly such as to instil confidence.

We wish to draw attention to two large issues in the organization of medical services.

1. In the last war in which we were engaged part of the profession joined the Army while the remainder stayed out of uniform and carried out the necessary attendance on the civilian sick. Such a division of labour was natural and reasonable in warfare as conducted in those days. Unfortunately, however, as we are all aware, the technique of war has changed, and the front line which has now to withstand the brunt of the enemy's fury is to be found in the homes of our civilian population—a front line, incidentally, crowded dangerously with millions of people as yet undisciplined to deal with the expected onslaught of bomb, gas, and fire. We therefore feel that the division of the profession into purely military and civilian components is completely artificial, and can only lead to misdirected energy and ultimate chaos of the medical services. This is particularly true of congested urban areas but, as we shall hope to show later, may well apply to rural districts also. If bombing is sufficiently intensive and continued over fairly lengthy periods (and this we may reasonably expect if the bomber is to achieve the end it has in view) hundreds of so-called civilian doctors in the affected areas will for long periods be engaged in nothing less than military practice—that is, for lengthy periods they will be giving whole-time service to the State and yet not be State servants. No matter how we organize first-aid posts, ambulance services, etc., the family doctor will have to devote himself to hundreds of cases of minor surgery in order to relieve hospitals already congested with the more seriously injured. Further, many elderly doctors with surgical experience in suburban areas may be called upon to relieve the overworked full-time surgeons in the hospitals, in which case the purely civil work to which they had been allotted will be completely neglected and their income from it correspondingly reduced.

2. The second point we wish to stress is the medical implications of large-scale evacuation of population into rural areas. We are led to understand that at least three and a half and perhaps five million people will be evacuated from London, and proportionately

large numbers from the East Coast and the industrial Midlands. In such circumstances we do not think we exaggerate when we estimate that at least six million town dwellers will suddenly find themselves herded into the rural districts of England and Wales. The medical problems involved in this immense shift of population are of a type quite different from those we have already considered, but of at least equal importance in the urgency of their solution. This aspect of the problem was referred to by Professor Major Greenwood in his admirable letter in the *Journal* of October 22 (p. 861), and it is unnecessary to labour the matter; it is clear enough, however, that if large numbers of town children accustomed to what may be termed mechanized sanitation—the turning of taps, pressing of switches, and pulling of plugs—are to be suddenly billeted in farms, cottages, and holiday camps, the closest supervision of water and milk supplies and of sanitation will become an urgent necessity. The earth closet properly used may be beyond reproach, but it easily becomes a menace to health.

Rural water supplies, even in these days, are not always above suspicion, and are frequently uncertain in quantity if not in quality. To ensure such adequate supervision the staffs of the public health departments of those rural sanitary authorities into whose areas immigration is to take place will have to be both strengthened and augmented. For in rural areas the M.O.H. is often a busy general practitioner, able to devote relatively little time to health problems and relying mainly on his sanitary inspector; moreover, the combined post of sanitary inspector and surveyor is even yet not unknown. Another obvious problem is that of the movement of populations from infected areas. It requires no expert knowledge and but little imagination to realize the dangers which will arise if the need for evacuation coincides with an epidemic in a district of typhoid, diphtheria, or influenza. It seems that, at the least, plans for mass immunization against typhoid and diphtheria should be in readiness, and more strenuous efforts might well be made during peace time to get children protected against the latter disease if not against the former. The evacuation of the three thousand Spanish refugee children from Bilbao last year showed on a small scale how successful mass inoculation can be in preventing the dissemination of typhoid from an infected group.

But enough has been said to indicate some problems and dangers which will inevitably arise, and we are at least entitled to ask what steps have been or are being taken to meet them. The problems being so immense, and the civilian and military aspects so intermingled, we feel that organized whole-time service for all doctors, whether civil or military, is essential. If such a State service should be introduced we would urge that some form of local autonomy for the profession should be an integral part of the scheme.—We are, etc.,

L. S. FRY.
L. P. GRAY.

London, E.4, Nov. 1.

SIR,—Mr. R. Ogier Ward in his letter (October 29, p. 914) points out that in any future war the number of dead and wounded would run into many thousands every twenty-four hours. If this is a fact, and I believe under modern war conditions it will be so, whether the large towns are evacuated or not, surely surgeons and doctors will find it absolutely impossible to cope with the work they will be called upon to do. In that case would it not be better to throw all the weight of our profession into the prevention of war rather than to prepare for something which is a physical impossibility?—I am, etc.,

WINIFRED HALL.

Manchester, Oct. 31.

Air Raid Precautions

SIR,—As medical officer of health of a county of a thousand square miles whose war-time population will be some three-quarters of a million, living to a great extent amid very important coal, iron and steel, aeroplane, and munition works, I was under the heavy responsibility of organizing the necessary aid for possible air raid casualties. There were conditions imposed which from the first appeared to me to negative the formulation of a successful scheme. I did not hesitate to argue to the utmost of my power against these conditions with the departments concerned, but without effect. Experience during the crisis has convinced me that I cannot leave it at that. I now feel at liberty to express my beliefs and to make my suggestions to the medical profession. It is not my wish to criticize the past; when I mention it I do so only to show that it is necessary to consider suggestions for the future.

I am unable to understand the Home Office argument that the first-aid posts are not for those requiring medical aid, and that anyway there will not be enough doctors to staff them. The people will expect medical as well as first aid at the posts. I believe that the treatment of casualties outside hospitals cannot be left entirely to medically unqualified first-aid volunteers. I believe that medical aid must be available promptly at every first-aid post: without it a tremendous amount of unnecessary work will be thrown on the nearest hospital, which will be all too fully occupied. I believe that medical aid at the posts will provide that feeling of security without which we must anticipate panic not only among the injured but among the first-aid volunteers, most of whom will have had no previous experience of dealing with casualties. As to there not being sufficient doctors to staff the first-aid posts, the Home Office appears to be under the impression that to provide medical aid at first-aid posts would necessitate doctors being stationed there whether the posts are called upon to function or not. That is not my idea.

There is another matter which should receive the fullest consideration of the profession—I refer to the secret compilation of the services that doctors were prepared to render in war time made by the British Medical Association on behalf of the Committee of Imperial Defence. At no time during the crisis, in spite of repeated and urgent requests, were the British Medical Association permitted to divulge that information, without which it was impossible for medical officers of health to arrange casualty services in their areas. The sooner the magnitude of the medical side of air raid precautions is realized the better, for when it is it will also be appreciated that it cannot be efficiently organized as a last-minute panic improvisation.

The solution to the medical problem is to my mind very clear. The problem is to provide medical aid for casualties occurring among a population at least twenty times as great as that at any time seriously exposed to casualties in the last war. Then nobody suggested that the problem could be efficiently met by a service such as is now suggested—namely, an ill-defined, uncertain, voluntary service, almost parochial in character, without rank, uniform, or disciplinary powers. It is essential that we should build on our past experience. What is obviously required is a civilian counterpart of the R.A.M.C. In short, we require a permanent Air Raid Medical Corps. This corps should be built upon the lines of the Territorial Army. It should be a uniformed corps, with rank, local training depots, and equipment, and a similar system of enlistment, pay, and allowances to that of the Territorial Army. As

this corps would be dealing with casualties among women as well as men the corps should have women as well as men in all its ranks. Selection of recruits should be made with care at least equal to that exercised by the Territorial Army, and the corps must have prior call on the services of its members in war time. The services of members could be required over a defined area. The function of the corps in war time would be to provide for the civil population all medical and ancillary services required inside or outside hospitals. Among other things it would provide a nucleus of trained but non-medical first-aid personnel as a standing crew at each post during war time, and would be expected on short call to provide from the local depots what I might describe as surgical flying squads for posts or hospitals. Space will not permit me to go into further details, but I hope I have given enough to make clear what I suggest is required.—I am, etc.,

Derby, Nov. 1. W. M. Ash.

Sir,—I should like to add my support to what has been said in your columns by Mr. R. Ogier Ward, Dr. Clement Francis, Mr. J. Johnston Abraham, and Lieutenant-Colonel Cyril Helm on this subject.

There is no doubt that had war come at the end of September last it would have found us woefully unprepared. The magnitude of casualties from high explosive bombs in large towns like London would have been enormous, among both the lay and the medical population. This would have meant that the limited supply of doctors would have been grossly overtaxed and their numbers greatly decimated, so that very soon there would not be sufficient to deal with the casualties as they arose. To fill the existing hospitals in London with casualties and staffs of medical people would be the surest way of sacrificing valuable and useful lives that could be and ought to be preserved.

Surely the first thing to aim at is to reduce the number of casualties to a minimum. No doubt the best way to do this would be to deal with the bombing machine effectively. At present no method is known, though Sir Kingsley Wood says he does not despair of this being done. Until this can be accomplished other methods must be found. It seems to me that the most satisfactory way would be the construction of an elaborate system of bomb-proof shelters on a most extensive scale. Carefully planned, this system could act in war time not only as shelters during air raids but as places of safety for casualties, where medical and surgical attention could be given without interference and risk from raiding aircraft. This would not only ensure that the number of casualties would be comparatively small and able to be dealt with without overtaxing the doctors, but it would create a sense of security and avoid panic. Further, by suitable planning the system could be used to relieve the ever-increasing traffic problem—in both peace and war time—for storage and garaging, and no doubt it could be put to many other uses. The cost would be great, but it would not be useless. It would be effective in its aim and would be of permanent use and a good investment from several points of view, besides giving work to many of our large army of unemployed. Further, the cost to the State of the many lives that would be unnecessarily sacrificed under such conditions as exist at present would by contrast be far greater. Hospital cases would have to be transferred to "safe" areas, but by such a system these would be greatly reduced in numbers. A certain amount of evacuation of civilians would probably still be thought desirable, but under these conditions this could be limited and the necessary disorganization which this entails restricted accordingly.

We have had a breathing space now, and much might be accomplished before an emergency arose. War is terrible enough at any time, especially modern warfare, but we have a right to expect that everything should be done as far as possible to mitigate these terrors and to prevent all unnecessary sacrifice of life.—I am, etc.,

Arthur G. Wells, F.R.C.S.

Medmenham, Bucks, Nov. 1.

Sir,—There are many pitfalls in thinking unimaginatively of another war in terms of the last, for science has not stood still in the last twenty years. No village in England is now remote from the vastly increased load that a modern bomber can carry at 250 m.p.h. over a range of 1,200 miles. A map of the places which suffered from air raids in the last war shows thirty-three in Norfolk. Thus although a purely agricultural county it was certainly in the danger zone. To-day our village is the same eighteen miles from the sea in distance, but only 4 minutes 13 seconds in time. Our one consolation is that bombs cost money, and we do not expect to be honoured deliberately with any "eggs," but an efficient air force with patrols continuously in the air may well expect to make speedy contact with squadrons of enemy raiders, and hope to bring some down. Thus planes loaded with high explosive, incendiary, or gas bombs may crash even in villages.

While admitting that high explosive bombs will be danger No. 1, gas will rank as No. 2. Thanks to the four wars since 1918, we know that deep shelters are an efficient but expensive counter to high explosive bombs on cities; gas, however, has not been tried out to the same extent as it would be in a totalitarian war between nations with first-class chemical industries. Chlorine was effective at Ypres in 1915 even against disciplined troops when it caught them unprepared and unprotected, and was again effective against the Italians when preceded by arsenical smoke, which penetrated their then inefficient respirators, causing them to vomit and discard their protection. We have been told too often that gas holds no terrors for civilian populations if . . . The public have never realized the implications underlying that qualifying "if" and remained blissfully inert until the crisis.

In July, 1918, "mustard" shells caused 8,000 casualties in one night against trained troops with good respirators because it was not detected. Mustard gas would be without doubt the chemical agent of election should another great war occur. Last time the enemy, being conscientious chemists, used it at the front in a pure state, but we now know that it is as effective in the crude state, of which there would be cheaper and unlimited supplies. Mustard gas hampers even trained troops with the necessity for anti-gas clothing and slow laborious decontamination, but against an untrained and unprotected population its insidious persistence and prolonged after-effects would prove demoralizing, and the nation whose civilian morale cracks first is the loser. Yet Lieutenant-Colonel Cyril Helm (*Journal*, October 29, p. 915) would provide the cities with their admittedly essential bombproof shelters at the expense of village gas-masks! Living as I do in a "remote" village some four minutes from the danger zone, I am thankful indeed that he is not a dictator, although the completeness of our bucolic precautions in the crisis would have surprised many a slumbering city father. —I am, etc.,

Litcham, Norfolk, Oct. 30. Eric Puddy.

A.R.P. and Underground Car Parks for London

SIR,—By extrapolating a graph curve of the numerical increase in recent years of private cars in Great Britain we can obtain ample evidence that unless measures are taken to restrict the daily flow of such vehicles into and out of the metropolitan area the already serious traffic congestion will shortly end in a literal impasse. If private cars on strictly official or trade business or owned by bona fide residents of London were alone allowed inside, and all cars whose occupants were concerned solely with shopping, visiting, theatres, dining, etc., were compelled to be parked outside, say, a six- to eight-mile radius from the Marble Arch, we should not be threatened with an alarming increase of the already existing difficulties of traffic organization. To accommodate prohibited cars commodious underground parking sites would have to be constructed on the principal radiating routes that link up the metropolis with outlying provinces.

The cost of making such parks would admittedly be high, but there would ensue a good return for the initial outlay and cost of upkeep not only financially but in other and more important ways, such as from (1) parking fees and (2) work for the unemployed. The parks, being below ground and well protected overhead, would provide excellent clearing stations for wounded and shelters for thousands of residents evacuating London in the event of air raids. The A.R.P. authorities would have at their disposal and within easy access safe, well lighted and ventilated localities equipped with sanitary arrangements, water supply, and so forth. Adoption of such measures would defeat the disadvantages of a sudden incursion of large numbers of adults and children into country villages with inadequate housing and drainage facilities, and in which neither water nor food supply is capable of meeting the demands of a great number of suddenly introduced extra mouths.—I am, etc.,

CHARLES M. BEADNELL,
Surgeon Rear-Admiral.

Egham, Surrey, Nov. 4

Food and Nutrition

SIR,—Your leading article in the *Journal* of October 29 (p. 895) on the subject of Crawford and Broadley's book, *The People's Food*, while affording an excellent summary of contents, does not avail itself of the opportunity of supplying a critical estimate. For instance, a general remark could have been made on the sparse treatment of the case of the group who do not spend enough to obtain an adequate diet, an occurrence not to be wholly excused on the grounds of the "advertising" basis of the inquiry, while it could have been pointed out, as was done recently in a review in the *Journal* of another statistical publication, that when one has read the book the addition to one's knowledge is mainly a matter of detail. In fact, in regard to this latter point, the main thesis of the book, relative to the existence of ignorance on dietary subjects and the necessity for education in this respect, has been stressed for years by several writers—for example, Cathcart in the *Journal* of February 27, 1937 (p. 436).

As in other investigations of the same type, there occur here the usual fallacies due to the essential unreliability of the dietary standards, with their blind "shots in the dark" in many instances, or additions, according to taste, opinion, or mere guesswork, to ascertained metabolic requirements, where these exist. The addition of infinitesimally small amounts of certain substances may raise by astronomical figures the numbers in the population alleged to be suffering from malnutrition, as is well instanced in the table on p. 158 with reference to vitamin A, where the whole population turns out to be undernourished. Failure to include a supply of vitamin D in the dietaries renders the figures for calcium and phosphorus requirements suspect. In the forming of such dietaries the Law of Diminishing Return should receive consideration, and the principle of aiming at accuracy of technique in experimental work only up to the standard of the largest unavoidable experimental error cannot be neglected. The latter canon, adapted to the nutritional sphere, implies that anti-nutritional factors other than of the alimentation variety, some of them of considerable magnitude, little known, and to a marked degree uncontrollable, may swamp not only the terminal fine adjustments in the alimentation field, which, owing to the Law of Diminishing Return, produce proportionately less effect than earlier additions, but even these earlier additions themselves.

While not underestimating the importance of "ignorance" and "education" in the present case—indeed on the contrary—one must point out that "the most urgent problem of all at the present time" would not appear to be, as the authors state on p. 301, "the severely practical task of educating the people of this country in the importance of proper diet," but rather that of supplying an adequate diet to those who have not the means available to procure it.

The main thesis of the authors is stated on p. 161. In all probability, they say, between 20 and 30 million individuals in the population are subsisting on an inadequate diet. Of these, 8 millions are not spending enough to procure it. This leaves, by difference, 12 to 22 millions who, though spending enough on food, are not obtaining an adequate diet. The problem with regard to this latter group, they state, is one for "education"—a difficult matter, as they point out on p. 86, owing to the "lack by the population at large of any spontaneous interest in dietetic subjects."

It is a relatively straightforward matter to obtain statistics regarding the proportion of the population who, while spending sufficient for the purpose, do not obtain an adequate diet, to draw the obvious conclusion that "ignorance" is responsible, and to indicate that "education" is the remedy. Where not enough money is spent to obtain an adequate diet the situation is different. Here three factors—"lack of money," "ignorance," and "luxury purchase"—are involved. The present investigation, though supplying figures for this group as a whole, gives no indication as regards the respective responsibility of these three items within the group. I admit that the procuring of reliable information on this point, since it involves among other things oblique personal criticism, is a difficult matter, as may be instanced by Dr. Neustatter's cautious approach to the subject (*Supplement*, October 1, p. 223).

Suppose, however, that in some way it has been obtained. It is not apparent what general scheme could be framed on it as a basis for ameliorating the situation. "Ignorance," of course, can be met by educative measures, but owing to their inherent basic difference no single plan could at once apply to the "lack of means" and the "luxury-purchasing" categories. In addition, in the actual application of the hypothetical remedy inquiry would be necessary to establish the right of individual cases to partake of the benefits; and this inquiry could be made, once for all, at the outset for the purpose of applying what appears to be the real remedy.

Such considerations go to show the futility of *ad hoc* dietary surveys in this sphere. The fallacy involved in applying statistical laws to individual cases requires no emphasis. In the present instance the application of a national, average, "per caput" cost figure for a dietary to a certain social class or to individual cases from families of varying family composition is entirely without warrant; the climax is reached when it is applied to cases where such psychological factors as "ignorance" and "luxury-purchase" are in evidence. The situation is an individualistic and intensely personal one to which statistical methods are inapplicable. A "locality" factor (reflecting to a considerable degree middleman's costs and profits) is also involved, for owing to varying costs in different districts (vide Dr. Neustatter's price table for

Bermondsey) no general or national average figure for the cost of a dietary in any one social class can be applied to this same class in a district or subdistrict chosen at random.

The only justifiable procedure in the circumstances would appear to be the obvious one. Relevant information regarding income, etc., and local dietary costs having been obtained in regard to an individual presumed to be in need of help towards obtaining an adequate diet, the data are available for deciding whether the individual in question should receive it on the grounds of actual lack of money. If so, it would appear that appropriate action should be taken on the spot not only on humanitarian grounds but also—if the position is accepted that private personal affairs are a public concern to the extent of justifying an inquiry—in order that the work done in carrying out this invidious task (which incidentally a promise of "relief" would render less arduous) should not be wasted. Such cases, indeed, constitute merely a special subsection of unemployment benefit and public assistance—special in the sense that particular care has to be taken that assistance is necessary because of actual lack of money and that, when afforded, it arrives at its true destination.

The details of how such a scheme could be made to function in practice have already been indicated in outline in a previous letter (*Journal*, June 30, p. 257). It is obvious also that in carrying it out data much more reliable than could otherwise be obtained might be collected, which data would have reference not only to alimentation in regard to the state of nutrition but also to other even more important factors having a bearing on it, if such an undertaking did not prove to be too intricately complicated and impracticable.—I am, etc.,

Aberdeen, Oct. 31. J. P. MCGOWAN.

Safe Childbirth

SIR,—In my book, *Safe Childbirth: The Three Essentials*, I have pointed out that easy labour depends not only on a well-shaped pelvis but also on flexible pelvic joints, and that such flexibility can be attained by correct exercises practised during pregnancy so that the pelvis may expand at the joints (sacro-iliac and pubic symphysis) during the act of birth. For this to occur those postures should be advocated which are adopted instinctively by most women if left to do as they like at the time of confinement—squatting, crouching, kneeling. So far in England I have not found a maternity hospital where I can have patients trained in the correct exercises and postures and confined in the posture best suited to them. To confine crouching a woman whose joints are rigid and whose pelvic floor is contracted is to court disaster—though I find that patients whose joints are flexible (whether naturally or after appropriate exercises) have easier and quicker confinements even if not allowed to assume the postures I advocate for delivery.

My conviction is that neither doctor nor midwife is to blame for our maternal mortality rates, but the mother herself, who must be taught she is an active agent, not a passive sufferer. She must regard herself as an athlete in need of training for her special job, not a poor invalid who must lie down and have the sympathy and prayers of all lest she die of it. Sister Randell of St. Thomas's, with her thirty years' experience, has developed in accordance with this idea a series of suitable ante-natal exercises to increase this natural mobility of the pelvic joints, with other exercises, of an opposite character, to be done during the puerperium to strengthen those muscles which draw the component parts of the pelvis together. It was necessary to find out what postures seemed most agreeable and natural to the patients during labour. To this end Miss Randell provided the patients with paper and pencil to record their impressions. We have secured some valuable information from this source alone, outstanding being the fact that the posture on back or side was most painful and never willingly assumed. Patients prepared on these lines have easy confinements and regain their normal figure almost at once, as photographs show.—I am, etc.,

London, W.1, Nov. 5. KATHLEEN VAUGHAN.

Undulant Fever

SIR,—A report of another case of *Brucella abortus* infection may be of interest.

On November 11, 1937, I was called to see a male, aged 32, who gave me a history of having felt sleepy in the afternoons and evenings for a period of about ten days, and, in fact, of having dropped off to sleep while reading the paper on returning from his office. He complained of violent headache and vomiting; his temperature was 102.2° F., his pulse and respiratory rates were correspondingly raised, and his tongue was slightly furred. Clinically I could find no cause for his condition, and made a provisional diagnosis of gastro-intestinal influenza. I treated him symptomatically, prescribing a fluid diet with phenacetin, caffeine, and bismuth carbonate. On the following day his headache and vomiting had ceased and his temperature had dropped to 100° F. After five days his temperature was between 98.4° and 99° F. in the mornings and between 99° and 100° F. in the evenings. The patient said he felt quite well and wanted to get up; this, of course, I refused to allow. At the end of twelve days, on November 23, I observed a few spots—perhaps eight—vaguely resembling rose spots, on the thorax and abdomen. The temperature was still between 99° and 100° F. from 6 p.m. to 10 p.m., but was normal at all other times; the tongue was still slightly furred. I thought of the possibility of one of the enteric group of fevers or undulant fever, and took some blood; the following is a copy of the pathologist's report:

> "Negative for *B. typhosus* in dilutions of 1:10, 1:25, 1:50, 1:100, and 1:250. Negative results also obtained for *B. paratyphosus* strains A and B in similar dilutions. With *Brucella abortus* agglutination takes place in dilutions of 1:50, 1:100, 1:500, and 1:1,000, but dilutions of 1:2,500 and 1:5,000 remain negative."

I then tried protein shock therapy with T.A.B. vaccine. The intravenous injection was given at 10 a.m., and by 10 p.m. on the same day the temperature had risen to 105° F. and the pulse rate to 104. The patient was feeling sick, had a violent headache, and was sweating profusely. Next morning his temperature was 97.2° F.; it remained subnormal for two days, then became normal.

The patient made an uninterrupted recovery. He has not suffered any recurrence or relapse although nearly a year has elapsed.—I am, etc.,

J. A. KENNETH DOUGLAS.

Neyland, Pembrokeshire, Nov. 2.

The international committee for instruction and action as regards the protection of the civilian community in time of war, which was set up at Luxembourg on July 4, met on October 28 at the Grand-Ducal Palace, and considered first its three-monthly review, *The Protection of the Civil Population in War*, the first number of which has already been published in Paris. Subcommittees have been constituted to deal with propaganda, diplomacy, military matters, medical treatment, legal questions, civilian defence, and protection of women; the activities of these subcommittees are beginning at once. The next meeting of the international committee will be held in Luxembourg next January.

Medical Notes in Parliament

Civilian Defence

Speaking on November 1 on the appointment of Sir John Anderson the Prime Minister said he would in fact be the Minister for Civilian Defence. He would have charge of air raid precautions and also be responsible for determining arrangements for national voluntary service. Mr. Chamberlain added that the Ministry of Health was in close touch with local authorities, and was responsible for the medical services, including nursing and ambulance provision. Other Departments concerned included the Board of Education, which must marshal children in case of evacuation. It was necessary that the activities of all the different Departments should be co-ordinated, so that each might know beforehand exactly what would be expected of them in an emergency.

On November 1 Mr. Lloyd informed Mr. Simmonds that action had already been taken, on the report of the Anderson Committee on Evacuation, both in the light of the recommendations in the report and of the experience gained during the recent emergency, to examine and prepare in detail evacuation schemes. Steps had been taken before the recent emergency to have ready schemes such as could be operated at once if there were no time for lengthy preparation. Information was given in the Press about such a scheme which had been prepared for London. It was, however, fully recognized that with time for preparation much could be done to improve such schemes, and the detailed work necessary for this purpose was in progress.

The King's Speech

The speech from the Throne outlining the programme of business for Parliament in the new Session was read by His Majesty the King in the House of Lords on November 8. In the course of it the following declarations were made:

The problems of civil defence, including that of the effective utilization of the resources of the nation for national voluntary service, will in future receive the undivided attention of a Minister—the Lord Privy Seal.

My Government will press forward with better housing, both urban and rural, and will proceed with the development of the educational services. They will vigorously continue the campaign for the improvement of the public health, and in particular will submit to you proposals for the earlier and more effective treatment of cancer.

The policy of My Government will continue to be directed to improving conditions in the special areas.

A Bill will be laid before you to amend the penal law dealing, in particular, with young offenders and those who commit repeated offences.

Measures will be laid before you to assist the production, improve the quality, and increase the consumption of milk.

Among the measures which you will be invited to pass will be Bills to amend the law relating to the carrying on of the business of insurance; to amend the Unemployment Insurance Acts; and to raise the amount of the Miners' Welfare Levy, in order to provide additional funds for the building of pithead baths.

A Bill will be submitted to you for the purpose of reorganizing Scottish administration, and centralizing the Government Departments in Edinburgh. Further action will be taken to deal with slums and overcrowding in Scotland, and a measure relating to the financial provision for this purpose will be submitted to you. You will also be invited to consider other Scottish measures, including a Bill for the amendment of the marriage law.

Debate on the King's Speech

During the debate in the House of Lords on November 8 on the motion for an address in reply to the King's Speech Lord STANHOPE gave an assurance that there was no intention on the part of the Government to curtail the social services of the country. He pointed out that in the King's Speech there was a reference to an effort which would be made to deal with cancer, a disease which had replaced tuberculosis as the greatest scourge afflicting mankind. Its seriousness could be gauged from the fact that, according to his information, cancer was responsible for no fewer than 200 deaths a day.

The debate on the address was adjourned until November 10.

IN THE HOUSE OF COMMONS

In the House of Commons, on November 8, the motion for an address of thanks in reply to the King's Speech was moved by Mr. Hely-Hutchinson and seconded by Mr. Markham. Mr. MARKHAM said he was glad to notice the reference to the Government's determination to eradicate cancer. This addition to the social services would be cordially welcomed in all parts of the House. The more effective treatment of cancer could not be carried out by the existing voluntary hospital system, and they would all like to see the most up-to-date methods, in co-operation with the local authorities, to set up adequate staffs and centres for the treatment of this great scourge. More than that, however, the great thing was to eliminate the ignorance, inertia, and fear which were the greatest allies of cancer in this country.

Mr. ATTLEE complained that there was nothing in the King's Speech with regard to the social services, that there was no mention of unemployment, and that the Government was equally vague on the question of the special areas. Nothing was said about the condition of the people nor about old age pensions. The Labour Party considered that the foundation of the national strength was in the condition of the people, and that a sound policy of nutrition was a basis of strength; and that that could not be obtained through a means test. The Labour Party welcomed the proposals for the reform of the penal system, the proposals to deal with cancer, and those relating to pithead baths.

GOVERNMENT REPLY

Mr. CHAMBERLAIN said that the Minister of Civilian Defence (the Lord Privy Seal) would give his prompt and undivided attention among other subjects to the evacuation of the civil populations from certain places in times of emergency. The second point which would occupy the Minister's attention would be the provision of adequate shelter accommodation in vulnerable areas. On the subject of national voluntary service a good deal of preliminary planning had been done for the mobilization of the nation's man power, and the Minister would accordingly find a considerable amount of material ready to his hand when he came to formulate his plans under that head.

NO REDUCTION IN SOCIAL SERVICES

With regard to the social services, it was not to be expected that we could at once and at the same time embark on an enormous armament programme, the whole cost of which we were not yet in a position to estimate, and face projects of social improvements which would lay on the taxpayers fresh and impossible burdens. There was no foundation for any suggestion that the Government was contemplating cuts in the existing social services. Nothing that had been said by any Minister gave any foundation for such an accusation, and, as the King's Speech showed, the Government was still making further extensions of the social services. The provisions for public health, the work of housing, and the clearing of slums and providing for overcrowding still went on vigorously. A new proposal mentioned in the King's Speech for making a frontal attack on that perhaps most frightening of all diseases, cancer, would,

he knew, have the approval of all parts of the House. Mr. Attlee had mentioned nutrition, and had spoken as though, because the word did not appear in the King's Speech, it must necessarily be absent from the minds of the Government. It had been in his own mind for many years since a conversation which he had, when he was Minister of Health, with the late Sir Walter Fletcher, who had said to him that by a comparatively small expenditure on teaching people how to feed themselves and their families we could do more to improve the health and physique of the nation even than by the greater efforts which were then being made at the Ministry of Health to improve housing conditions. That statement was so striking that it made a very deep impression on his mind, and as a matter of fact the Minister of Health to-day was engaged on the most far-reaching and comprehensive inquiry into the food habits of the people that had ever been made in this or any other country. Everybody would agree that the more information they had about this subject the better, in order that when they did proceed they might be building on solid ground and be certain they were proceeding on right lines. Referring to agriculture, Mr. Chamberlain said that the most important measure and one of the earliest to be introduced would be the new Milk Bill. The main principle of the Bill was to encourage the consumption of liquid milk, alike in the interests of the farmer and of national health.

The debate was adjourned.

Civil Population in Air Attack

On November 3 Mr. HERBERT MORRISON opened a debate on protection of the civil population in air attack. He said that during the crisis there was a deficiency in the number of gas masks in some localities and some masks were delivered short of vital parts; there were mental hospitals under the care of the London County Council which had not received gas masks to this day. On the subject of hospitals Mr. Morrison said the authorities had to anticipate casualties on a large scale. It was essential that the hospitals organized locally and centrally should trace the movements of the patient from the time he might be damaged in the street, to the first-aid centre, then through the casualty hospital to the base hospital. Ambulances and stretchers were needed. This business was nowhere more vital than in London with its numerous local authorities and hospital authorities. Since 1930 there had been five different inquiries on this subject. Four of these ended without reaching conclusions; finally came a report of the Wilson Committee presented on July 20, 1938. The crisis came in September, and there was no time to finish the plan for the organization of the hospitals. Supreme direction was then undertaken by the Ministry of Health. Fortunately, the London County Council was reasonably prepared and ready with medical reserves and food reserves. In structural precautions in hospitals the council, like other authorities, was not so well prepared, because technical advice was not supplied by the Home Office until June 17, 1938. The story was the same with ambulances. No additional stretchers had been received when the crisis was acute. To supply them was a Government responsibility, and when, under pressure from the London County Council, the Ministry of Health assumed general ambulance responsibility a supply of 4,000 was secured by the end of the crisis week. After the Ministry of Health had taken that responsibility from the Home Office, it issued a circular on September 23 instructing the Metropolitan Borough Councils to earmark ambulances, although it should have known that ambulance organization was the duty of the London County Council under the Air Raid Precautions Act and under the regulations made by the Secretary of State. The boroughs were responsible for first-aid stations, which ought to have been under the Ministry of Health. These were short of medical supplies and of stretchers.

Sir SAMUEL HOARE replied for the Home Office, and pointed out that local authorities had been slow in acting upon Home Office circulars about the reception and distribution of respirators. Eventually the Home Office had to act on its own initiative, and within a few days over 38,000,000 were distributed.

Mr. R. C. MORRISON said the Ministry of Health was not helpful during the crisis. The local hospitals had no advice or information at all. The voluntary hospital in his constituency (Tottenham, North) was unable to inform the local authority whether it was to be regarded as a base hospital for air raid precautions. The Home Office in the middle of the crisis instructed local authorities that they should distribute to every house in the United Kingdom a booklet principally occupied with information on how to make rooms gas-proof. On the day that booklet was distributed a conference was held at the Ministry of Health, and representatives of voluntary hospitals were there told that "as regards gas-proofing, gas is no longer considered to be a major risk, and it is not thought that any special precautions should be taken."

Sir JOHN ANDERSON, speaking for the first time as Minister responsible for Air Raid Defence, said the question of how to fit in the local authorities would have to be looked at afresh in the light of recent experience.

LONDON VOLUNTARY HOSPITALS DURING THE CRISIS

Colonel NATHAN said he had asked question after question in the House on what was expected of voluntary hospitals, but no information was forthcoming. He was concerned with two voluntary hospitals. One was a special hospital and the other was a great teaching hospital. Both were within the danger area. The special hospital was the Infants Hospital in Vincent Square, and the teaching hospital was Westminster Hospital, where he was chairman of the committee charged with air raid precautions. For months efforts were made to discover what the hospitals were expected to do with their patients, their staffs, and their buildings; what would be their functions in the case of air raids; and where the expense would fall. To none of these inquiries was any answer forthcoming. Only on the day when the Prime Minister's journey to Berchtesgaden was announced were the first steps taken. A meeting of representatives of the teaching hospitals was suddenly summoned at the Ministry of Health, and the Director-General stated that the hospitals emergency service had just been created. Colonel Nathan interposed the remark that Colonel Hebb, Director-General of this emergency system, assisted in the London area by Dr. Dobbie on the London County Council, from that moment gave unstinted service and was of the utmost help. He said the statement made at the meeting in the Ministry was: "Gentlemen, this emergency hospital service has just been created. You must expect bombs to fall on London at any moment. Do the best you can."

No written instruction was ever issued from beginning to end. They were told they must evacuate their hospitals. When they asked how, they were told that ambulances would be provided but that arrangements had only that day been made for conversion of rolling stock and road transports to take stretcher cases and that the services would not be available for three weeks. They were told to increase the amount of hospital accommodation by 30 or 50 per cent., but not a blanket, mattress, or a bedstead had been ordered. When the Ministry of Health was asked what they were going to do they said they were going to commandeer blankets and bedsteads from Harrods, Selfridges, and elsewhere. It was unforgivable that no steps of any kind had been taken, because every casualty resulting from air raids would have to be treated in some hospital. They were told to provide emergency stores, but at the same time that they were asked as voluntary organizations to do all these things they were told that if there was no war the Government would not pay anything for them. They were to make these arrangements at the expense of charitable funds, and if there was a war some unspecified contribution would be made from Government sources.

The two hospitals for which he spoke were able, within a week of the first instructions, to inform the Ministry of Health that they were ready to take emergency cases to an extent greater by 50 per cent. than their ordinary accommodation. They acted upon their own initiative and sought no Treasury consent. They had many difficulties. The Home Office was

unable to provide a sufficiency of gas masks, not only masks for patients but duty masks for the staffs. His interpretation of the Government instructions on gas protection in hospitals was that in a hospital, with the constant traffic of patients in and out, it was impracticable to have complete gas protection. They were advised that special accommodation and gas-proof rooms should be made for cardiac and other chest cases and for the protection of food. They were told that there would be officers from the local mortuary who would deal with the dead. When they asked the local authorities what arrangements they had made for the dead, the reply was that the authorities had no instructions and no information, and no intention, unless instructed, of dealing with the situation. That was an instance of the lack of co-ordination between Government Departments and between the central and local governments.

As regards the special hospital in Vincent Square, originally it was to be a Grade "A" hospital for infants; later, after they were fully equipped to deal with children who might be injured, they were told that this Infants Hospital was to be transformed at once into an adult casualty clearing station. They set about the change, and in a week the hospital was ready to receive, instead of 100 infants, 175 adults. He informed the Ministry of Health that the hospital had operating instruments only for infants and no surgical instruments for adults. He asked where they could get the latter, and how the expense would be borne. The Ministry said it had no instruments and could not help the hospital to get them, and that if the hospital bought them they would not get any grant from the State if there was no war. Thus the hospital was asked to take the whole of the risk, and it took it.

Then there was the question whether men and women should be treated in the same hospital. This was not simple when dealing with casualties resulting from air raids, which would be either gas or surgical casualties. In the ordinary way men went to the men's wards and women to the women's wards, but in a casualty clearing station, with a constant flow of casualties coming in and going out to the base hospitals, that could not be done, and both would have to remain for a time in the out-patient department. The Home Office said that men and women would have to be separated, but he doubted whether this was practicable in the same hospital. Another point was how were casualties to be directed to the various hospitals. It was essential that first-aid stations and hospitals should be under the same general and central direction and administration. It had so far been arranged, on the whole, that no medical officer should be attached to first-aid stations, whereas it was imperative that there should be a medical man in charge of each. It would be impossible for the hospitals to cope with the inrush of casualties unless these had first been sorted into the more and the less serious cases by some responsible person. He hoped to have an opportunity of discussing with the Minister some of the difficulties with which hospitals were confronted.

Mr. Herbert Morrison's motion was defeated by 355 to 130 and an amendment was carried which, while taking note of existing deficiencies in the system of civilian defence, welcomed the decision of the Government to entrust the system to a Minister appointed for that purpose and to complete with the utmost speed the measures necessary to provide for the country's need. This amendment was carried without a division.

Answering, on November 3, questions about air raid precautions, Mr. GEOFFREY LLOYD said contracts for the manufacture of 45,000,000 civilian respirators had been made. Approximately 4,000,000 civilian respirators had been issued to the metropolitan boroughs and the city of London, and had been distributed to the public. The instructions issued by this country about methods of protection against gas remained unaltered.

Undulant Fever in Great Britain

Mr. W. S. LIDDALL asked on November 3 the number of human cases of undulant fever arising in Great Britain attributable to bovine infection through milk or meat in each of the past ten years, and what measures were taken to reduce the risk of human infection by the group of Brucella organisms. Dr. ELLIOT, in reply, said undulant fever was not a generally notifiable disease and statistics of its incidence were not available. Estimates had been made by responsible investigators that there might be some 400 or 500 cases per annum in this country. The importance of all measures to ensure the cleanliness and safety of milk in order to avoid risk from this and other milk-borne diseases had frequently been emphasized by the Ministry of Health. Considerable progress in this matter had been made. He had no information to suggest that meat was a source of human infection with this disease.

On the same day Mr. LIDDALL asked what proportion of tested milch cows in Great Britain showed evidence of Brucella infection as manifested by agglutination blood tests. Mr. W. S. MORRISON replied that no statistics were available on the proportion of milch cows submitted to the agglutination test which reacted, but the general view was that about 40 per cent. of dairy cows were infected. Where at a routine clinical inspection of a dairy herd, or at a special inspection made following a report from a local authority that suspicion attached to certain milk, a milch cow was found by a veterinary inspector showing clinical signs of the disease, the sale of the milk of such animal was prohibited by Section 5 of the Milk and Dairies (Consolidation) Act, 1915. The problem of contagious abortion in cattle had been under investigation at a number of institutions under the aegis of a committee of the Agricultural Research Council appointed in consultation with the Medical Research Council.

Insurance Practitioners in England and Wales.—On January 1, 1937, 16,812 medical practitioners in England and Wales were under agreement with insurance committees. The total amount paid them from national health insurance funds in respect of the year 1937 was £8,050,108.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

A. M. Barrett, M.B., B.Ch., of Pembroke College has been appointed University Demonstrator in Pathology for three years from October 1, 1938.

At a Congregation held on November 4 the following medical degrees were conferred:

M.D.—L. Foulds, D. W. C. Gawne, G. Rocyn-Jones.
M.B., B.Chir.—*T. J. Fairbank, *G. H. Baines, *T. L. Barbour, *R. I. C. Bradford, H. W. Adeney.
M.B.—*G. Williams.

The degree of M.A. was conferred on G. D. Channell and F. W. Smith, University Demonstrators in Anatomy.

* By proxy.

UNIVERSITY OF LONDON

Ian M. Macgregor has qualified to receive the Academic Postgraduate Diploma in Public Health.

The Senate on October 19 awarded the degree of Ph.D. in Hygiene and Public Health (non-clinical) to S. Mukhopadhyay.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following scholarships have been awarded for 1938-9: *Sir Owen Roberts Memorial Scholarship:* Miss M. V. Teichmann. *A. M. Bird Postgraduate Scholarship in Pathology:* Miss N. T. F. Crowley. *Mabel Webb and A. M. Bird Research Scholarship:* Miss M. V. Sudds.

Lectures

A course of three lectures on "The Pathogenic Trypanosomes of Africa and the Tsetse Flies (Glossina) that Convey Them" will be given at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., by Dr. H. Lyndhurst Duke on Tuesday, Wednesday, and Thursday, November 15, 16, and 17, at 5.30 p.m. At the first lecture

the chair will be taken by Dr. C. M. Wenyon, F.R.S., director-in-chief of the Wellcome Bureau of Scientific Research. The lectures, which will be illustrated, are addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

Studentship

Applications are invited for the Geoffrey E. Duveen Travelling Studentship, of the value of £450, for research in any aspect of oto-rhino-laryngology. The studentship is normally tenable in the first instance for one year, part of which shall be spent in study abroad, in accordance with a scheme to be approved by the Studentship Board, but it may be extended for six months or for one or two years, and during the extended period the student may be allowed to undertake research at the Royal Ear Hospital or some other laboratory approved for the purpose. Full particulars can be obtained from the Academic Registrar, University of London, W.C.1, and prescribed forms of application must reach him not later than December 31.

UNIVERSITY OF LIVERPOOL

At a meeting of the University Council, held on November 1, C. V. Harrison, M.D., first assistant in morbid anatomy at the British Postgraduate Medical School, was appointed Senior Lecturer in Pathology from January 1, 1939, in place of Dr. T. F. Hewer, who has been appointed to the Chair of Pathology in the University of Bristol.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the quarterly comitia of the Royal College of Physicians of London, held on October 27, with the President, Dr. Robert Hutchison, in the chair, Dr. C. M. Hinds Howell, Dr. A. C. D. Firth, Dr. F. E. Tylecote, and Dr. Bernard Hart were elected councillors.

The following Fellows were elected representatives of the College: Dr. H. L. Tidy on the committee of management of the Conjoint Board; Sir Comyns Berkeley on the council of the Central Midwives Board; Dr. John Hay on the court of governors of the University of Liverpool; Sir Stanley Woodwark on the Central Council for District Nursing; Sir Arthur MacNalty on the executive committee of the Imperial Cancer Research Fund; and Dr. R. D. Gillespie at the conference of the National Council for Mental Hygiene, January, 1939.

The President announced that Dr. R. E. Smith had been appointed Milroy Lecturer for 1940, his subject to be "Acute Infectious Diseases at School"; that the Jenks Memorial Scholarship had been awarded to John Vesey Aveling, late of Epsom College; and that the first awards of the Linacre Scholarships, recently instituted by the College, had been made to G. M. Scott and T. Stapleton, late of King's School, Canterbury.

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

Margaret Ball, M.B.Camb., R. Bolton, M.B., W. G. Brander, M.B.Camb., D. G. Freshwater, M.B.Camb., D. M. T. Gairdner, B.M.Oxf., M. Gelfand, M.B. Capetown, F. T. Grey, M.B.Sydney, J. D. Hardy, M.D.Belf., B. G. Haynes, M.B.Sydney, H. B. Hunt, M.D.Birm., N. F. Lilauwala, M.B.Bomb., J. D. Robertson, M.D. St. And., M. Sarwar, M.B.Punjab, S. R. F. Whittaker, M.B.Camb.

Licences

Licences to practise were conferred upon the following 139 candidates (including twenty-three women) who have passed the final examination in medicine, surgery, and midwifery of the Conjoint Board, and have complied with the necessary by-laws:

D. C. Arnott, Gladys M. Auchinleck, H. B. Austin, J. C. Ballantyne, A. M. Bennett, W. M. Bennett, E. S. Binns, M. W. Bird, A. N. Blades, F. A. Boggiano, T. W. Branch, Mary Brandon-Jones, R. T. Brooks, D. C. Brown, P. A. K. Brownlees, J. F. Buckmaster, J. A. Burnett, K. C. Burrow, A. Caplin, Phoebe Charlton, P. S. Cheshire, M. M. R. Clarke, A. Conachy, W. H. R. Cook, Patricia G. Gooper, C. C. Coplans, A. W. J. Craft, C. McK. Craig, E. I. Davis, W. W. Deane, Ursula M. Dick, B. Donnelly, M. N. S. Duncan, A. R. P. Ellis, C. J. Evans, G. M. Evans, R. W. Evans, Margery Feachem, T. Fenwick, E. L. V. Fitch, D. S. Foster, J. B. Franklin, Beryl M. Gee, R. C. R. Gethen, Janet D. Gimson, T. Griffiths, Hilda B. Grinyer, H. Haggag, N. J. Haggar, N. H. Halper, P. J. Hardie, R. F. E. Harrington, J. W. S. Harvey, R. J. Healey, R. D. Hearn, F. D. Hindmarsh, E. R. Hodgson Todd, R. O. Holland, J. G. S. Holman, Doris I. E. Huband, E. G. Hudson, J. P. W. Hughes, R. D. S. Jack, H. Jackson, Beryl M. Jagger, J. D. James, J. James, D. H. Jones, D. R. M. Jones, D. H. Jones, M. E. Jones, Ruth Jones, T. R. Jones, W. A. D. Jones-Roberts, J. B. Joyce, H. G. Kahlenberg, F. K. Khosrawy, Isabella R. Kratt, G. L. Lambert, L. A. Laventhall, G. J. Laws, Mary I. Leasor, K. N. Lloyd, S. C. MacPherson, W. M. Maidlow, G. L. Manson, F. J. C. Matthews, R. Maycock, T. Mendelsohn, Caroline Milne, N. E. Monteuuis, Christina O. Moody, G. O. M. Neatby, Sylvia D. Orchard, T. W. B. Osborn, Pearl Pearlman, H. W. Peck, J. F. Perredes, H. C. Perry, Blanche Phillips, R. K. Pilcher, F. Prescott, R. F. Pusey, S. F. Raistrick, A. E. Rampling, H. N. Rees, L. M. Reid, Nora Reid, M. O. Richardson, S. Roberts, S. V. Rush, J. Scholefield, C. A. R. Schulenberg, Ida B. S. Scudder, C. C. Shaw, P. Shemilt, L. G. P. Shiers, M. M. Shrinagesh, Margaret E. M. Slater, H. S. C. Smith, E. F. G. Stewart, T. L. Stoate, H. Stott, W. J. Street, M. Taylor, K. R. Thomas, M. R. Tomlinson, J. D. Wade, R. T. Warren, E. H. S. Weston, F. B. B. Weston, J. B. Wheelwright, J. Whitehead, Gladys E. Wiese, A. A. Williams, G. H. T. Williams, W. W. Wilson, R. L. Witney, J. Zigmond.

Diplomas

Diplomas were granted, jointly with the Royal College of Surgeons of England, to the following candidates:

DIPLOMA IN PUBLIC HEALTH.—B. Adak, Joan Butterworth, M. A. K. Durrani, A. B. R. Finn, Lorna M. A. Goulden-Bach, R. D. Gray, A. B. Guild, F. C. Hilton-Sergeant, C. W. C. Karran, H. D. Palmer, H. R. Rishworth, H. L. Settle, H. K. Shahani.

Diplomas in Child Health were granted to the thirty-four candidates whose names were included in the report of the meeting of the Council of the Royal College of Surgeons of England in the *Journal* of October 22 (p. 870).

Dr. Morley Fletcher left England on October 28 for Australia, where he will act as representative of the Royal College of Physicians of London at the opening of the Royal Australasian College of Physicians. The Royal College of Physicians of London is presenting an illuminated address and a replica of its silver wand or caduceus, which was presented to the College by Caius in 1556.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The annual meeting of Fellows and Members will be held at the College in Lincoln's Inn Fields on Thursday, November 17, at 4 p.m., when a report from the Council will be laid before the meeting. Fellows and Members can obtain copies of the report on application to the secretary, and can have their names placed on the list of those to whom it is sent annually. A copy of the agenda will be issued to any Fellow or Member who may apply for one.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the Council, held on October 29, with the President, Sir Ewen Maclean, in the chair, Denis Valentine Morris (Galway) and William Keverall McIntyre (Tasmania) were elected to the Membership of the College.

Thomas Charles Clare (Leicester) was admitted to the Fellowship.

The following were admitted to the Membership:

Arthur Charles Belfield (New Zealand), *Phillip Godfrey Chalewood (India), Johannes Cornelius Coetzee (South Africa), *Gladys Story Cunningham (China), James Bruce Dewar (Edinburgh), *John Edis-Myers (India), Llewelyn Mervin Edwards (London), Arthur Bryant Evans (London), Agnes Jean Herring (Dundee), Donald Forsyth Lawson (Australia), Thomas Emmet Lennon (Liverpool), Charles Rutherford Morison (Harrogate), Henry Anthony Rippiner (Bradford), Dorothy Anderton Sharpe (London), Pillapalayam Veraswami Venkatswami (India), *Harry Silvester Waters (India).

* In absentia.

At the termination of the meeting Mr. G. F. Gibberd assumed the office of honorary secretary and Professor William Fletcher Shaw assumed the office of President. A vote of great appreciation for the services of Sir Ewen Maclean during the past three years as President and during the whole period since the inception of the College was adopted by the Council.

The following candidates for the diploma of the College have satisfied the examiners:

O. G. Bark, Dorothy M. Brook, Isobel Brown, H. Burton, S. J. Cohen, R. R. Foote, G. R. Griffiths, L. Langmore, J. B. F. McKenzie, Agnes M. Mitchell, G. D. Owen, Constance E. Peaker, R. G. Record, E. R. Rees, H. G. Roberts, Una R. Roy, S. A. Scorer, Marjorie Swain, W. G. Swann, J. F. Swan, J. D. Watt, R. H. Vasey, H. S. Wigfield.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow the following officers were elected: *President*, Dr. John Henderson; *Visitor*, Dr. J. Souttar

McKendrick; *Honorary Treasurer*, Dr. James H. MacDonald; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative for the General Medical Council*, Mr. G. H. Edington.

CONJOINT BOARD IN SCOTLAND

The following candidates have been approved at the examination indicated:

DIPLOMA OF L.R.C.P.ED., L.R.C.S.ED., L.R.F.P. AND S.GLAS.—C. G. Adams, A. C. B. Allan, M. Y. Anthony, S. A. Antonious, R. E. G. Armattoe, S. N. Banerji, G. A. Bell, J. A. Brown, R. A. Brown, P. Chatterjee, B. Crawshaw, S. Edelson, Frieda Ehrlich, W. V. A. Erskine, A. F. A. Fairweather, N. L. Freund, H. S. Friedlander, B. M. Heller, Kate Hermann, B. Hirschson, F. J. Hoenigsberger, R. B. Hollos, J. K. Houston, T. Shih-Do-Hsu, G. S. Kambourian, F. Kreuter, W. Lubansky, J. C. McGrath, J. L. Markson, S. T. B. A. Mattar, K. Meyerhof, E. Mintz, S. Mirk, A. G. Mohammed, W. Morron, R. D. Oliver, S. Oshinsky, G. Pickar, B. Pribram, I. B. Radow, D. Raeside, P. Rosenbaum, J. Schlosser, J. M. Silverstein, D. Simenoff, R. Sorkin, Marie H. Stevenson, E. S. Sutherland, A. Shapiro, A. Taterka, J. Tolland, A. Waheed, B. J. S. Wessels.

EPIDEMIOLOGICAL NOTES*

Acute Poliomyelitis

For the first time in four weeks there has been a decline in the incidence of poliomyelitis in England and Wales—70, compared with 81 in the previous week; in London there were 4 cases as against 11. In Scotland and Ireland the disease also appears to be on the decrease. The counties chiefly affected in England and Wales were: Leicester 8 (Leicester 1, Melton Mowbray 2, Shopshed 3, Melton and Belvoir 2); Gloucester 6 (Bristol 4, Cirencester 1, Nailsworth 1); Lincoln 6 (Scunthorpe 4, Stamford 1, South Kesteven 1); Essex 5 (Tendring 2, and 1 each in Braintree and Bocking, Harwich, Romford); Glamorgan 5 (Cardiff 4, Neath 1); Southampton 5 (Droxford 2, and 1 each in Winchester City, Winchester Rural, Havant and Waterloo); Kent 4 (Bromley 1, Tunbridge Wells 2, Herne Bay 1); London 4 (1 each in Deptford, Fulham, Hackney, and Lewisham); Oxford 3, all in the City of Oxford. The three cases in Scotland occurred in Aberdeen, Edinburgh, and Paisley.

In Germany during the week ended October 15 the number of cases of poliomyelitis rose from 353 to 364; the chief areas affected were: District of Cologne 42 (27), Düsseldorf 16 (13), Swabia 23 (16), Saxony 39 (27), Baden 26 (16), the Saar 12 (7). In Holland during the week ended October 22 the number recorded, 33, was the same as in the preceding week; of these 13 (10) were in the province of South Holland.

Enteric Fever

Notifications of enteric fever in England and Wales fell from 37 to 19, and in London from 12 to 1. In Scotland, on the other hand, a rise from 4 to 7 was recorded, while in Ireland the figures were identical in both weeks. More than one case was notified in the following counties: Berks 3 (Windsor 2, New Windsor 1); Sussex 3 (Chichester 2, Hastings 1); Salop 2 (1 each in Oswestry and Shrewsbury); Middlesex 2 (1 each in Hendon and Southgate). The London case occurred in the Borough of Hackney. Of the 7 cases reported in Scotland 3 were notified as paratyphoid fever in Lanark County, while 1 case of typhoid fever was notified in Airdrie, Glasgow, and Lanark County. One case of typhoid fever was notified in the County of Midlothian.

Primary and Influenzal Pneumonia

An appreciable increase is noted in the notifications of primary and influenzal pneumonia in England and Wales (578, compared with 534 in the previous week), in which London shared (65, compared with 45). The counties mainly affected were: Lancaster 94, of which 32 were in Manchester and 16 in Liverpool; Yorks (West Riding) 70, 24 in Sheffield and 8 in Bradford; Warwick 45, of which 32 were in Birmingham; Durham 41; Stafford 30. Deaths from influenza in the 126 Great Towns fell from 26 to 22; more than one death was reported in London and in Birmingham, the numbers being 4 and 3 respectively.

Encephalitis Lethargica

The reports furnished to the Health Section of the Secretariat of the League of Nations indicate that there were no major epidemics of encephalitis lethargica in any country in the years 1936-8. During 1936 considerable increases over the mean for the preceding five-year period were observed in Germany and Japan. In the latter country 1,005 deaths from encephalitis lethargica were recorded in 1936. In the United States of America cases rose from 723 in 1936 to 1,068 in 1937; the chief areas affected were: New York State 121; Illinois 104; Missouri 190; Texas 47; California 75.

Diphtheria and Scarlet Fever

Diphtheria continues to spread in England and Wales—1,432 for the week under review, compared with 1,367 in the preceding week—while a fall was noted in London, from 173 to 153. In Scotland and Eire considerable increases were recorded during the week. The chief centres affected were: Liverpool 59 (57), Manchester 28 (32), Bristol 23 (20), South Shields 21 (19), Leicester 15 (23), Newport 15 (8), Lewisham 14 (13), Poplar 13 (6). Of the 27 deaths from diphtheria in the 126 Great Towns 5 were in London and 2 each in Southport, South Shields, Stanley (Durham), and Birmingham. In Scotland increases were noted in Glasgow 101 (78), Dundee 21 (9), Lanark County 19 (11), and decreases in Aberdeen 14 (18) and Edinburgh 13 (14). There were three deaths, all in Glasgow.

In England and Wales notifications of scarlet fever rose from 1,864 to 2,000, and in London from 159 to 192. The chief centres affected were: Manchester 56 (47), Liverpool 50 (50), Wandsworth 26 (11), Camberwell 24 (10), Stoke-on-Trent 31 (30), Bristol 44 (30), South Shields 23 (15), Leicester 22 (14), West Ham 18 (18). There were two deaths, in London and Leeds.

Measles and Whooping-cough

One death from measles (in Birmingham) was recorded in the Great Towns. Of the 22 cases of measles notified in London 4 were in Deptford and 3 each in Stepney and Poplar. In Scotland 8 cases were notified, compared with 18 in the preceding week—Glasgow 6 (9), Edinburgh 2 (1). No deaths were reported from any of the sixteen Great Towns.

Of the five deaths from whooping-cough in the 126 Great Towns of England and Wales 1 each occurred in Dagenham, Tottenham, West Ham, Bradford, and Leicester. In London 146 (131) cases of whooping-cough were notified, chiefly in: Kensington 18 (8), Hackney 17 (21), Stepney 14 (9), and Wandsworth 13 (14). In Scotland cases rose from 163 to 178, notably in Glasgow 147 (134), Paisley 10 (6), and Edinburgh 8 (4). There was one death each in Motherwell, Wishaw, and Glasgow.

Cholera and Plague

During the week under review there were 578 (862) cases of cholera and 282 (433) deaths in the Central Provinces of India, 270 (330) cases and 128 (141) deaths in Bombay Presidency, 218 (223) cases and 97 (104) deaths in the United Provinces. In China 24 (87) cases and 6 (30) deaths were reported in Shanghai and 7 (7) cases and 5 (9) deaths in Hong Kong.

In India during the same week there were 43 (73) cases of plague and 6 (5) deaths in the Central Provinces, 67 (88) cases and 65 (73) deaths in Burma, 11 (25) cases and 8 (11) deaths in Madras Presidency, and 47 (13) cases and 23 (8) deaths in Bombay Presidency.

* Except where otherwise mentioned, figures in parentheses refer to the week preceding the one under review.

No. 43

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 29, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (124 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	19	2	4	1	2	18	3	4	—	1		
Deaths		—	—				1	—				
Diphtheria	1,432	153	274	81	26	1,694	213	255	73	42	1,315	213
Deaths	27	5	3	5	—	25	3	8	2	—		
Dysentery	39	23	23		—	59	21	20		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	2	—	—	1	—	4	2	—	—	—		
Deaths		—					1					
Enteric (typhoid and paratyphoid) fever	19	1	7	3	3	40	11	1	11	5	40	
Deaths	—	1	1	—	—	1	1	—	—	—		
Erysipelas			81	3	7			75	9	3		
Deaths		2					2					
Infective enteritis or diarrhoea under 2 years	45	10	9	11	2	58	12	11	7	2		
Deaths												
Measles		22	8		2			133		3		
Deaths	1	—	—	—	—	11	—	—	—	1		
Ophthalmia neonatorum	87	9	35		—	90	10	29		—		
Deaths												
Pneumonia, influenzal‡	578	65	11	2	19	819	88	10	2	5	821	86
Deaths (from Influenza)	22	4	1	—	1	36	9	3	—	3		
Pneumonia, primary			229	9				255	11			
Deaths		14		11	6		17		5	8		
Polio-encephalitis, acute	4	1				2	—					
Deaths		—					—					
Poliomyelitis, acute	70	4	3	1	—	21	—	—	—	—		
Deaths		1					—					
Puerperal fever	3*	3	19	2	—	4*	4	26	2	1		
Deaths		1†					1†					
Puerperal pyrexia	183	17	31		—	18	21	30		1		
Deaths												
Relapsing fever	1	—			—	—	—	—		—		
Deaths												
Scarlet fever	2,000	192	411	92	93	2,601	191	533	77	114	2,606	337
Deaths	2	1	—	—	—	1	—	—	—	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		146	178		9			47		5		
Deaths	5	—	2	—	1	9	1	—	1	1		
Deaths (0-1 year)	258	35	45	32	13	304	39	68	17	17		
Infant mortality rate (per 1,000 live births)	43	29				51	32					
Deaths (excluding stillbirths)	4,226	834	556	178	121	4,330	857	570	174	133		
Annual death rate (per 1,000 persons living)	10.4	10.6	11.3	12.1	10.7	10.7	10.8	11.7	11.9	11.8		
Live births	6,247	1,116	828	343	228	6,406	1,264	771	308	204		
Annual rate per 1,000 persons living	15.3	14.2	16.9	23.2	20.2	15.8	15.9	15.8	21.0	18.1		
Stillbirths	250	31				260	41					
Rate per 1,000 total births (including stillborn)	38	27				39	31					

* After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

† Death from puerperal sepsis.

‡ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Obituary

JOHN MUNRO DUPONT, M.D.

The passing of Dr. John Munro Dupont, who died at his home on October 30, will be greatly regretted in Frome and the surrounding district. He was a son of the late Mr. and Mrs. Dupont of Ampthill, Bedfordshire, and was born in London in 1871. On his father's side he was of French Huguenot extraction: his mother was Scottish. From Bedford College he went to Edinburgh, qualifying in 1901 and taking his M.D. of that University in 1905. Shortly after qualifying he proceeded to South Africa with the R.A.M.C. to take part in the Boer War, and stayed there for nearly two years in the R.A.M.C. after the war was over. He gained the South African medal with four bars. Before starting in general practice he held the appointments of clinical assistant to the Samaritan Hospital for Women, London, resident medical officer to the Royal National Chest Hospital, and resident physician to the City Hospital, Edinburgh. For over thirty years Dr. Dupont practised in Frome, Somerset, where he held the post of honorary medical officer to the Victoria Hospital, an institution in which he took the greatest interest. He was, indeed, the main instigator of the scheme for the extension of the hospital which has since been carried out and was the first chairman of the Extension Committee.

Dr. Dupont joined the British Medical Association in 1904 and was chairman of the Bath Division in 1925, the year in which the Annual Meeting of the Association was held at Bath. He was the first country member to be elected to the Clinical Society of Bath (in 1920). At the outbreak of the great war he was captain in the South-Western Mounted Brigade Field Ambulance, with which unit he served successively on the east coast, at Suvla, and in Egypt, whence he returned to England on account of the death of his wife. Subsequently he acted as medical officer in charge of ambulance trains in France, retiring with the rank of major in 1919. In addition to his post at the Victoria Hospital Dr. Dupont was medical referee for the Ministry of Pensions, medical officer to the Post Office, and medical officer to the Frome Town A.F.C. He was twice married, and leaves a widow, two sons, and a daughter. He was a strong supporter of the Conservative Party and an enthusiastic follower of county cricket.

The following well-known foreign medical men have recently died: Professor RENÉ DU BOIS-REYMOND, for many years director of the University Physiological Institute of Berlin, like his father, and a pioneer in the science of sport, aged 75; Professor PAUL KRIZG, head of the German Hospital in Peking, aged 70; Dr. ARNO LOEWE, a prominent Dresden orthopaedic surgeon; Professor JOHANNES LANGE, director of the university clinic for nervous diseases at Breslau, aged 47; Dr. GEORGE E. DE SCHWEINITZ, an eminent ophthalmologist of Philadelphia, author of a textbook on diseases of the eyes, which passed through numerous editions, and former president of the American Medical Association, aged 79; Hofrat FERDINAND HUEPPE, emeritus professor of hygiene in the German University at Prague, aged 86; Dr. ERNEST SCHULTZE, emeritus professor of psychiatry at Göttingen, aged 73; and Dr. HERMANN GOCHT, for many years professor of orthopaedics at Berlin, aged 69.

CO-ORDINATION OF MEDICAL SERVICES

Deputation to Sir Thomas Inskip

A deputation from the Central Emergency Committee of the British Medical Association, together with representatives of the Royal Colleges of Physicians and Surgeons, was received on November 8 by Sir Thomas Inskip, Minister for Co-ordination of Defence, who was accompanied by officials of the Government Departments concerned. The members of the deputation, introduced by Sir Kaye Le Fleming, Chairman of Council of the British Medical Association, were: Dr. H. Guy Dain (Chairman of the Representative Body), Mr. N. Bishop Harman (Treasurer), Sir Alfred Webb Johnson, Dr. Clark Kennedy, Professor R. M. F. Picken, Sir Charles Wilson, Dr. Letitia Fairfield, with Dr. G. C. Anderson and Dr. C. Hill, Secretary and Deputy Secretary of the Association.

The deputation urged the establishment of machinery for the co-ordination of all medical services for the civilian population under a single body, and the co-ordination of the civilian medical organization with that of the Service departments. It also proposed that this machinery of co-ordination should be closely associated with the Central Emergency Committee of the B.M.A. as being representative of all branches of the medical profession.

In reply, the Minister said that he greatly appreciated the assistance given by the British Medical Association, especially in compiling an exhaustive survey of the profession. He expressed himself in sympathy with the principles put forward, and undertook that they would be examined by the Departments concerned. He assured the deputation of his desire to co-operate fully with the profession and to avail himself of their services.

A fuller report of the proceedings will appear next week.

The Services

The Princess Royal inspected Princess Mary's Royal Air Force Hospital, Halton, on October 29. She opened this hospital eleven years ago, and there were then 204 beds; this number has now been increased to 535. It is one of the most modern of Service hospitals, and has a new *x*-ray department, an isolation department, several additional wards, and a chapel. Other hospitals for the Royal Air Force are being erected as part of the extension programme. The Royal Air Force Nursing Service was created in June, 1918, and five years later, with the approval of King George V, it was designated "Princess Mary's Royal Air Force Nursing Service." It now includes a matron-in-chief, matrons, senior sisters, sisters, and staff nurses. Foreign service is undertaken in Iraq, Aden, and Palestine. The Princess Royal has previously visited Cranwell Hospital and the R.A.F. hospital at Sarafand in Palestine.

R. F. Schuurmans (*Nederl. Tijdschr. Geneesk.*, 1938, **82**, 4799) records two cases of stricture of the vagina. The first was in a nullipara aged 30, who sought advice for sterility and dyspareunia. She showed the condition of cirrhosis subhymenalis described by Halban, which consists of a circular stricture situated beneath the hymen. The second case was that of a woman aged 50, who had a vaginal discharge and certain psychical disturbances connected with the climacteric. Examination revealed the condition described by Labhart as kraurosis fornicis vaginae. According to Schuurmans the cause of both these conditions is the same—namely, deficient secretion of follicular hormone associated with chronic trauma.

Medical News

The twenty-third Guthrie Lecture will be given before the Physical Society by Professor A. V. Hill, Sc.D., F.R.S., to-day, Friday, November 11, at 5.15 p.m., in the Physics Department of the Imperial College, Imperial Institute Road, S.W. The subject of the lecture is "The Transformations of Energy and the Mechanical Work of Muscles."

The Church Union Association has arranged an exhibition under the title of "The Family—To-day and To-morrow" at Caxton Hall, Westminster, S.W., from November 14 to 17. On Wednesday, November 16, at 3 p.m., there will be an address by Mr. F. J. McCann on "The Falling Birth Rate," with Dr. Halliday Sutherland in the chair.

A reception will be held at the Incorporated Liverpool School of Tropical Medicine, Pembroke Place, on Wednesday, November 23, at 8.30 p.m., when the Mary Kingsley medal will be presented to Dr. M. A. Barber, Professor E. Brumpt, Emeritus Professor W. S. Patton, and Professor W. Schulemann. Lady Danson is an honorary recipient.

The Congress of Rheumatism organized by the French League against Rheumatism which was to have been held in Paris on October 8 has been postponed to December 3, when discussions will be held on the clinical forms of rheumatism, medical treatment, physical treatment, surgical and orthopaedic treatment. The subscription for French and foreign doctors is 120 francs, and for members of the League 80 francs. Further information may be had from the Secrétariat de la Ligue Française contre le Rhumatisme, 23, Rue du Cherche-Midi, Paris, 6e.

The twelfth annual Radiological Congress and Exhibition will be held on December 7, 8, and 9 at the Central Hall, Westminster, S.W. Additional accommodation has been reserved, and the exhibition will be considerably larger than in the past. The nineteenth Mackenzie-Davidson Memorial Lecture will be given by Dr. G. Shearer, and the twenty-first Silvanus Thompson Memorial Lecture by Dr. R. Ledoux-Lebard. The annual dinner will be held on Friday, December 9, at Claridge's Hotel.

The Sir Frederick Hobday Presentation Fund has now reached its first £1,000, contributed by about 850 subscribers. This response has encouraged the committee to carry on in order to obtain the amount necessary for the object which Sir Frederick Hobday has in view—namely, the endowment of a chair of comparative medicine. The subscription list is still open, and contributions may be sent to the honorary secretary, Mr. E. T. Cox, 3, St. John's Avenue, Putney, S.W.15.

Professor G. Roussy and Dr. C. Oberling have presented to the French Academy of Medicine a report entitled, "Can the Tarring of Roads be considered as one of the Causes of the Recrudescence of Cancer of the Lungs?" Their answer is in the negative in so far as observations hitherto published are concerned.

The Stirling Branch of the British Medical Association celebrates its jubilee this year. The minutes show that preliminary meetings were held in 1888 and that the Branch was formally constituted in 1889. The occasion will be particularly celebrated at the annual dinner of the Branch to be held at Stirling on November 30.

The President and Council of the Royal Society have awarded the Davy Medal to Professor George Barger, F.R.S., in recognition of his distinguished researches on alkaloids and other natural products; and the Darwin Medal to Professor F. O. Bower, F.R.S., in recognition of his work in the field in which Darwin himself laboured.

Dr. O. H. Mavor has been appointed a member of the committee to advise the Home Office and the Scottish Office on matters connected with the administration of the Cinematograph Act, 1909.

Of 25,361 books published in Germany in 1937, 990 (3 per cent.) were medical works of which the average cost was 9.40 marks as compared with the average cost of 3.99 marks for all books.

According to official statistics the total number of births in 1937 was 630,000 in France, 892,000 in Poland, 955,000 in Italy, 1,279,000 in Germany, and 2,190,000 in Japan.

Some cases of tularaemia have recently been notified in Finland as well as in Soviet Russia and Sweden.

Dr. Tiffeneau, professor of pharmacology and materia medica, has been elected dean of the Paris Faculty of Medicine.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Protection of Eczematous Face

Dr. D. BRAHAM writes: I wonder if any reader could inform me of a preparation that could be used to protect the face of a patient with chronic eczema from the effects of the sun in the spring and summer. The preparation would have to be almost invisible, and in the form of a cream. Perhaps workers with ultra-violet ray apparatus could assist with suggestions, which would be gratefully acknowledged.

Cattle Ringworm in Man

Dr. STEWART (Banbury) writes: I should be grateful if any reader would suggest a cure for cattle ringworm occurring in the human subject. My practice is in an agricultural district, and I have tried various remedies for this condition without success.

Treatment of Pruritus Ani

Dr. R. E. M. TAUNTON (Hanwell, W.) writes: I would like to add a further note with reference to the recent contributions on the treatment of pruritus ani. Several years ago I read in your columns the suggestion that ung. metallorum should be used. This I have prescribed until recently. Now I prescribe "tar dermament," a solution of coal tar in an analgesic resinous base put up by Parke, Davis and Co., and have found it the most valuable of all remedies. Wash the anus at bedtime with cold water (without soap), and apply the paint with a brush that is supplied with the bottle. Though I do not pretend that this is a permanent cure it is at least a temporary one, and it acts like a charm. It gives instant and lasting relief. In severe cases the paint can be applied twice daily, but once every few nights will usually be enough.

Treatment of Superficial Glossitis

Mr. S. RUSSELL (Gold Coast) writes in reply to the query by "O. M. N." with regard to the treatment of superficial glossitis in the *Journal* of September 10 (p. 604): May I suggest the administration of marmite. In this country, where the condition is common, marmite acts as a specific.

Medical Apparatus in 1816

Dr. J. N. COLLINS (Peterborough) writes: At the establishment of the Peterborough Public Dispensary in 1816 the physician was authorized to obtain (1) an electrical machine, and (2) an apparatus for recovery from suspended animation. Can anyone suggest what these were? Induced currents were not known until 1831, so the electrical machine was probably a frictional machine, but how was it used and for what purpose? But the second item is a puzzle.

Income Tax

Life Assurance Relief: Educational Policy

"ABBEY" took out a small educational policy for his son in 1930. The amount assured is payable in annual instalments after he attains 14, or can be converted by him into an endowment policy. The inspector of taxes states that no relief is due in respect of the policy.

*** If the policy provides for educational benefits if the child lives, irrespective of the life of the parent, then no relief would be due.

LETTERS, NOTES, ETC.

Educational Function of Tonsils

Dr. F. C. EVE (Hull) writes: The thoughtful paper by Mr. P. W. Leathart on the biological function of the tonsils in the *Journal* of October 22 (p. 835) prompts me to add an interpretation which I have long believed in but have withheld for lack of proof—namely, that the function of the tonsils is educational. Everywhere the body is protected against the entrance of invading organisms by epithelium. But the crypts of the tonsils are narrow crevices—unprotected by epithelium—penetrating deeply into a spongework crowded with lymphocytes. Mr. Leathart tells us that these crypts always contain living micro-organisms. These facts suggest strongly that each crypt acts like a turnstile or grid to admit germs to the fortress one by one so that the defending lymphocytes can become acquainted without risk with the "taste" of hostile germs prevalent in the outer world, of which otherwise they would remain in ignorance. Thus they are educated to prepare antibodies against future invaders of the same "taste." Indeed, in diphtheria the education may be too drastic. Each dividing lymphocyte must then pass on its education to its two daughter cells—in the tonsils or wherever else they wander in the lymph stream or blood. For an educational function of this sort the situation of the tonsils and adenoids is highly strategic—just where organisms from the teeth, from the nostrils, and from the food impinge. Peyer's patches, in the same way, are educated against varying organisms prevalent in the small intestine; we know that Peyer's patches swell in typhoid. The crypt-like appendix—richly supplied with lymphoid follicles—learns in more leisurely fashion how to produce antibodies against different and anaerobic organisms—nowadays a dangerous task. This interpretation—so reasonably suggested by structure and site—is supported by the fact that tonsils, adenoids, and appendix may be removed without detriment, for already the education of their "immortal" lymphocytes has been accomplished. (True, the tonsil may be useful as a filter, though not when it has become septic and harmful.) If all three organs were removed at birth their loss might well be serious, and the experiment should be tried with regard to the subsequent immunity of a newborn animal. Again, the mysterious thymus gland, containing as it does a reserve army of millions of uneducated lymphocytes, gradually removes itself when lymphocytes have been sufficiently educated elsewhere. So, too, do the tonsils. I have not referred to polymorphonuclear leucocytes, partly because I could quote a natural experiment (chronic pyuria with bacilluria, with and without haematuria) which showed clearly that polymorphonuclear leucocytes do not phagocyte organisms unless they have previously been opsonized—that is, the polymorphonuclear leucocytes are not educated to recognize hostile germs: the germs have first to be labelled dangerous before they can be devoured. What do pathologists say to these suggestions?

Distribution of Cancer

Dr. W. DALGLIESH (Witney, Oxon) writes: The findings of W. E. Snell and H. A. Bathurst in the *Supplement* to the *British Medical Journal* of September 3 (p. 178) and of G. B. Leyton and H. G. Leyton in the *Journal* of August 21, 1937 (p. 378) with regard to the regional distribution of cancer, though seemingly contradictory, cannot be regarded as incompatible in view of the fact that Leyton and Leyton can demonstrate in microphotographs the presence in cancer tissue and the absence in normal tissue of a mycelium which is also found on certain trees and in some edible products imported from rural districts. Their presumption that this is the causative element in cancer seems to have some justification in view of results, observed by myself, of recent treatment by Dr. Nevil Leyton of cases of cancer, based on this hypothesis.

A Rare Complication of Labour

Dr. I. GORDON CAMERON (Kuala Lumpur, F.M.S.) writes: I recently attended a confinement which proceeded rapidly and normally till the child's head was born. I then found that the cord was tightly coiled twice round the child's neck. It was too tight to be released by the usual method of drawing loops over the head, so it had to be divided between forceps. On attempting to unwind it, I found that the cord was actually knotted, and a third pair of forceps had to be used to untie the knot. The child was then delivered rapidly and, to my relief, it breathed shortly afterwards. I have had one case with a short cord wound twice round the neck causing premature separation of the placenta, with concealed ante-partum haemorrhage, resulting in the death of the child, but I have never before come across a cord coiled twice round the neck and knotted. I wonder if a similar case has ever been reported in the medical literature.

The Occipito-posterior Case

Dr. ROBERT A. WELSH (Felton) writes: Bethel Solomons, in his *Epitome of Obstetrical Diagnosis*, says, "These [occipito-posterior presentations] are the bane of the practitioner outside Ireland. In Ireland patience is found to be the best treatment, and rotation usually occurs: this principle should apply also to other countries." He then goes on to say: "If spontaneous delivery does not occur some advise manual rotation, others forceps rotation, others manual rotation followed by forceps. We do none of these unless the head is low and rotates easily with the hand. If rotation is difficult we deliver as a persistent occipito-posterior with forceps."

The House of Dent

The publishing firm of J. M. Dent celebrated its jubilee two weeks ago with a dinner at Stationers' Hall, when Mr. Hugh R. Dent, son of the founder of the firm, presided. Those present were given a handsomely bound memorial volume entitled *The House of Dent*, which is a reissue of the *Memoirs of J. M. Dent* to which have been added four chapters bringing up to date the publishing activities of this well-known house during the past twelve years. It is a volume which can be warmly recommended to those who are interested in the writing and the making of books.

M & B 693

We have received from Messrs. May and Baker, Limited, a copy of their booklet entitled *M & B 693: Biological and Biochemical Data*. We have previously referred in these columns to the results obtained from this product in the treatment of pneumococcal infection, and those who would like a copy of the booklet just issued, as well as a pamphlet on the use of M & B 693 in the treatment of pneumococcal infections, will receive them on application to the firm at Dagenham, England.

Disclaimer

Dr. S. LEVY writes: I should be glad if you would allow me to disclaim any responsibility for certain reports relating to the treatment of a patient in Tilbury Hospital which appeared in the daily Press. Neither this report, nor other reports concerning myself, were inspired by me, directly or indirectly.